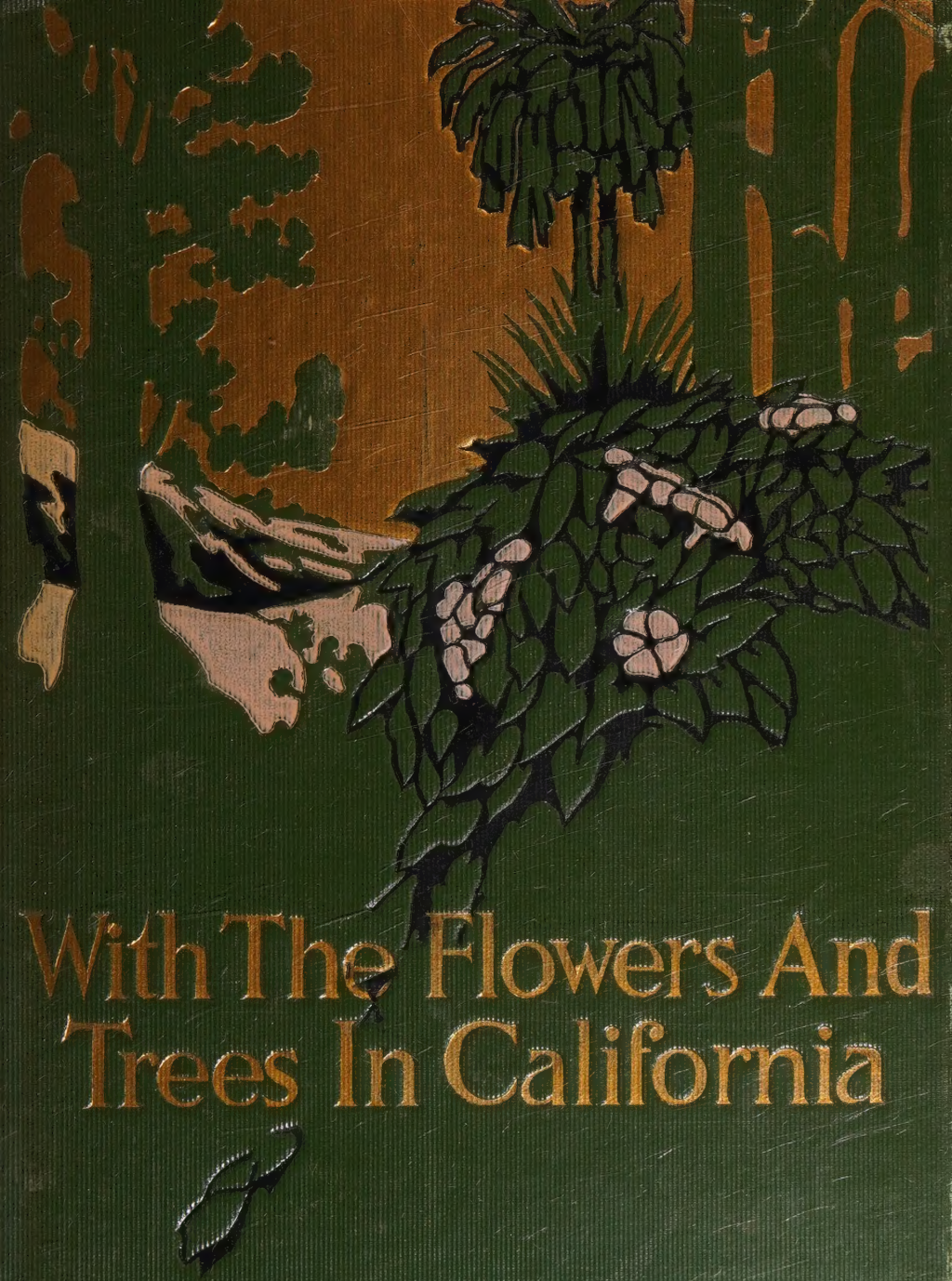

With The Flowers And Trees In California

CHARLES FRANCIS SAUNDERS

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WITH THE FLOWERS AND TREES IN CALIFORNIA

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Pink sand verbena, which every spring carpets the Colorado Desert of California

WITH THE FLOWERS AND TREES IN CALIFORNIA

BY

CHARLES FRANCIS SAUNDERS

Author of "Under the Sky in California," "A Window in Arcady," Etc.

ILLUSTRATIONS OF FLOWERS IN COLOR BY

ELISABETH HALLOWELL SAUNDERS

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E. H. S.

To her dear memory who shared with me
These flower-girt trails beside the sunset sea,
This book I offer, fain somewhat to tell
Of that sweet sisterhood she loved so well—
She for whom now there blooms pale asphodel.

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PREFACE

In preparing the following pages (which the scientific student, if he deigns to dip into them at all, will probably think sadly trivial at times), the author has by no means intended to cover the entire field of California plant life. Rather has he sought merely to touch in an informal sort of way upon certain characteristic features that enlist the interest of those travelers to whom the State's wonderful floral and arboreal life, indigenous and exotic, makes any appeal at all.

In doing this, the author has tried to revive as vividly as may be, the memory of his own delight and inquisitiveness when, twelve years ago, his eyes first beheld the gardens wild and cultivated of the State which, of all our Commonwealths, is to Flora the most hospitable and by her the most favored; and to set down the answer as well as he can to many questions which naturally arose in his mind then and which are on the lips of many tourists and residents alike, to-day.

If the subjects seem at times to be treated some-

what airily, it is hoped that it will not be assumed that they have therefore been handled carelessly. Pains have been taken to verify all facts of which the author has not personal knowledge. Certain pages have required much delving in the dust of forgotten records, both English and Spanish, all but inaccessible to the general reader; and some facts gleaned in this way are now, it is believed, presented for the first time in a popular style.

To the many friends and correspondents who have in manifold ways assisted the author in his pleasant labor, he takes this means of extending his cordial thanks. Particularly does he desire to express his obligations to Miss N. M. Russ, Librarian of the Pasadena Public Library, and to Mr. S. B. Parish of San Bernardino, kindest of friends and best of botanists.

C. F. S.

Pasadena, California, 1914.

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WITH THE FLOWERS AND TREES IN CALIFORNIA

WITH THE FLOWERS AND TREES IN CALIFORNIA

I

IN THE FOOTSTEPS OF EARLY COLLECTORS

SITTING in an easy chair of a winter's night, the lamp aglow at my elbow and the fire crackling on the hearth before my toasting feet, I find an especial fascination in reading of the adventures of pioneers carving their heroic way through the virgin forests and across the unmapped plains and deserts of this New World. I prefer particularly some personal narrative of the actors themselves, setting forth in straightforward, simple phraseology what they themselves saw, did, suffered and enjoyed, rather than the embellished histories of the closet historians, or the fanciful narratives of avowed romances. To work out on the map, for instance, the routes traversed by Fremont or Juan Bautista Anza, where white men had not set foot before; to put a finger on the spot where their motley caravans crossed such and such a river, their

flimsy rafts perhaps upheld by swimming Indians, or where, accepting the challenge of the rock-ribbed sierra, they conquered it by some heart-breaking pass unknown till then; to read their comments upon the strange plants and animals that they encountered, and to guess what their pioneerish names stand for in the exact nomenclature of our own day —all this makes rare diversion for an indoor reader with a taste for the open air.

How the Virgin Flora Looked in the Padres' Days

So far as any one knows, the first white men to look upon this flowery land that we call California, were the Portuguese navigator, Juan Rodriguez Cabrillo and his mariners, sailing in Spain's service for the purpose of discovery. The log of Cabrillo is extant and from it we learn that in the autumn of 1542 he landed at what is now San Diego and upon some of the islands along the coast. There is nothing, however, in this record to indicate that the plant life of the country appeared to him noteworthy, and probably at that dun season of the year it did not.

The next expedition to make a landing on California soil, appears to have been that celebrated one of Sir Francis Drake, who in June and July, 1579, stopped for a few weeks in a little harbor near the

A typical California poppy field

Golden Gate, at first believed to have been the Bay of San Francisco, but identified by modern historians as the neighboring Drake's Bay. From the diary of Drake's chaplain, a certain fanciful Francis Fletcher, one gleans little that is now recognizable of California natural history. "How unhandsome and deformed," he complains, "appeared the face of the earthe itselfe, shewing trees without leaves and the ground without greennesse. . . . In the middest of their summer, the snow hardly departeth even from their doores, but is never taken away from their hills at all." Evidently the summer of 1579 was an "unusual" one, as a modern Californian would put it, or, what is more likely, the plain-spoken Drake was right when he described his chaplain as "the lyingest knave that lived."

The account of the Spaniard Viscaino, who in November, 1602, cast anchor in the harbor of San Diego, contains a few sentences bearing on plant-life, that possess interest. His men explored a tongue of hilly land—plainly the noble promontory now called Point Loma, which throws a protecting arm around San Diego Bay. A couple of generations ago there was a tradition among San Diegans that this point, now bare of native tree growth, was once well wooded, and Viscaino's record confirms this. His explorers, he says, "found on the hill

considerable oak wood, other trees which seemed like rosemary (*otros árboles que se parecian al romero*), and some fragrant and wholesome herbs." That reference to a tree resembling rosemary (*romero*) is very tantalizing, for one would mightily like to know just what one that was, of all the California sisterhood of plants, that first found favor enough in pioneer eyes to be mentioned in the record. Viscaino called it an "árbol," a word that is usually Englished as "tree," but may be applicable to a shrub. To-day upon those southern hills, there grow at least two shrubby plants whose haunting fragrance of leaf might have reminded those Spanish wanderers of the rosemary of their Mediterranean homeland. One is a sort of sage known to botanists as *Audibertia Clevelandi;* and the other, which bears foliage very like our rosemary, is the Spanish Californian's "romero de la sierra," mountain rosemary, or, botanically, *Trichostema lanatum.* In default of exact description,—for there was no scientist with Viscaino's expedition,—it is anybody's guess now, and so it must be left.

After Viscaino, it is almost two centuries—to be exact, in the spring of 1769, with the arrival at San Diego of the first ship of Galvez's Holy Expedition for the settlement and Christianization of Upper California—before the curtain really rises upon the

beautiful wild plant-life of the country. An account of the expedition was published by one of the officers, Don Miguel Costansó, and the first impression made upon the storm-tossed, scurvy-racked mariners by the lovely country, remained with him when he wrote. It was May, when the ships arrived in San Diego Bay, and all the land was "of happy aspect." There was abundance of trees and fragrant shrubs and captivating flowers; he lumped them in non-botanical way as rosemary, salvia, and roses of Castile; but above all was he pleased with the riot of wild grapes that were at that season blooming deliciously in the river bottoms. Costansó, however, was a civil engineer, and, his first enthusiasm over the floral exuberance of the land expended, he turned to more practical matters.

In June arrived the arm of the expedition which had made the journey from Lower California by land, and with this party came Padre Crespi, who also has left matter of record—especially to our purpose being a diary which he kept of a trip by land that was made northward from San Diego to San Francisco Bay, under the leadership of Don Gaspar de Portolá, who was to be first governor of Upper California. This exploring party left San Diego on July 15, 1769, and marched by easy stages, hugging the coast pretty closely and reach-

ing the present site of San Francisco in November of the same year. Their way was over ground upon which were later to rise the cities of Los Angeles, Santa Barbara, San Luis Obispo, Monterey, and San José; and Crespi's journal notes down in brief fashion the principal events of each day. The southern end of the trip, being accomplished in summer, and when every sight was still novel, was marked with many a pleasant happening. There is comfortable mention of grassy camps by cheerful "eyes of water"—the pretty Spanish phrase for springs; by rush-fringed ponds, and by little streams that came running from happy dells embowered in wild sage and rosemary—Viscaino's rosemary, perhaps. Lovingly the Padre speaks of the rich wild pastures for the comfort of the beasts, and of other springs where watercresses floated, "good and wholesome."[1] Infinitude of wild grape vines formed dense thickets in the washes, and clamber-

[1] There are perhaps a score of references in Crespi's journal to the presence of "berros" (water-cresses), in streams all along the coast—a fact that should interest botanists, among whom there is a difference of opinion as to the indigenousness in California of the common water cress (Nasturtium officinale). Crespi might, of course, have applied the term to some plant resembling the European cress, as our pioneers were wont to apply Old World names to such New World plants as reminded them of those at home and were yet quite different. There seems to be really no indigenous Californian, however, that resembles water cress near enough to have deceived so intelligent an observer as Crespi appears to have been.

ing to the tops of trees, swung their purple clusters of fruit in mid-air. In places was profusion of wild tuna cactus, which, says the Father, "has not failed us in all our journey from Lower California." One wonders at this mild reference to the spiny plant which modern Californians anathematize for a pest; until it is remembered that the purple "pears" borne by the sort he refers to, have always been an important article of food to Indians and Mexicans. But of all the native plants that caught the Spaniards' eyes, there was none that so enraptured them as the wild roses. These Crespi always calls roses of Castile, and he seems to register the presence of every thicket of them from San Diego to San Francisco! "Both sides of our way," he records with delight of a certain day, "were lined with the rose bushes of Castile, from which I broke one bunch with six roses opened and about twelve in bud."

As the cavalcade advanced, crushing in its progress a multitude of minty shrubs whose perfume companions every saunterer to-day over the untraveled ways of California, little valleys would now and then open up in the semblance of cultivated fields by reason of the trim, creeping vines of the wild gourd. Now there was descent into pleasant arroyos where sycamores, "corpulent" of body, cast grateful shade; now hills were skirted, their sides

dotted with live oaks looking from afar like groves of fig trees to eyes accustomed to the orchards of Spain. Streams were fringed with "eyebrows" (the quaint Spanish term) of willows and wild blackberries, and always and again those beloved roses of Castile. To the nightly camp came friendly Indians, bringing, in baskets of native weave, acorns and flour ground from the wild seeds of the region. Those would have been halcyon days for the collector of Indian baskets, when for a handful of glass beads, he might have had the finest in California.

Crespi's journal is naturally richer in its reference to shrubs and trees than to herbaceous plants for he was not a professional botanist; and, besides, the season was late for any display of floral beauty. In the matter of trees his observations possess more than passing interest. Besides the characteristic sycamores and live oaks of the southern part of the State, he notes, for instance, the little wild walnut trees of the San Fernando Valley, of which we may still have a glimpse on the hills near the Cahuenga Pass on the automobile highway that leads up from Los Angeles to Santa Barbara. Of greater interest is the record of finding that particular gem of California's arboreal crown, the redwood. On October 10, 1769, near what is now Santa Cruz, they passed over "plains and spreading hills covered with high

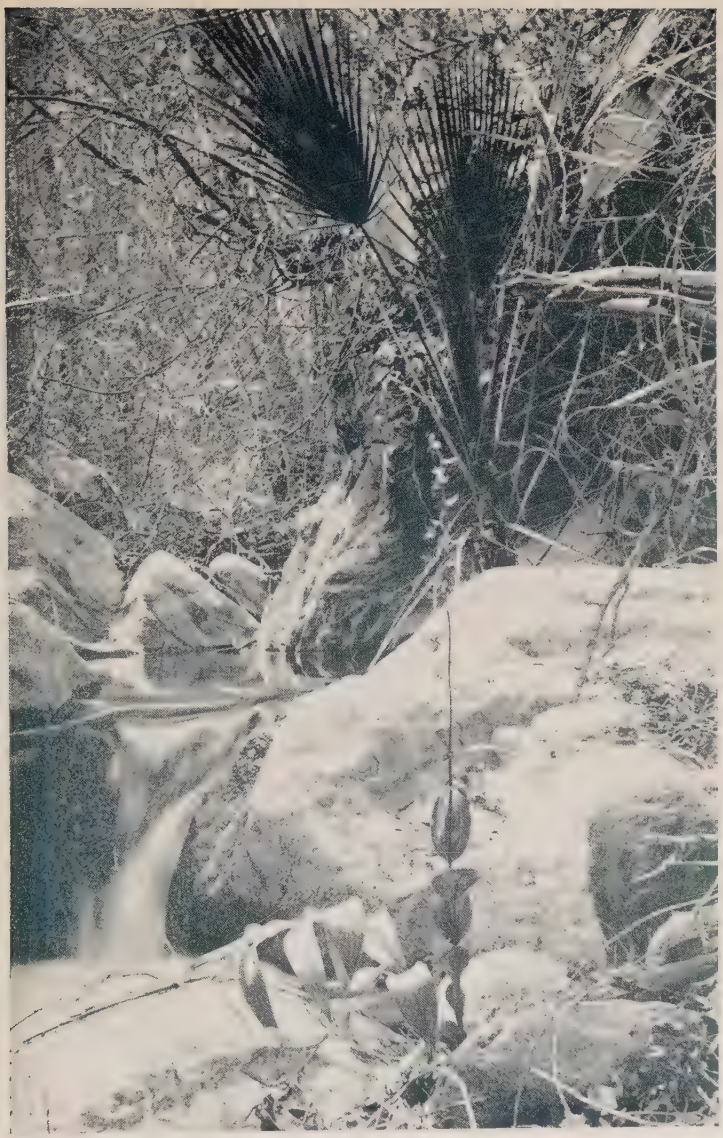
trees of red wood, trees unknown whose leaves differ from cedars, although the wood and color resemble them, but yet very different without having the odor of cedar, and in the trees we encountered very brittle. In these regions they are very abundant, and because nobody of the expedition knows them they have been named with the name of their color," that is, *el Palo Colorado,* the Spanish equivalent of the redwood. This is doubtless the first record of the sight of this noble tree by white men.

In those early days the only practicable approach to California was on the ocean side, and the policy of Spain prohibited any commerce between the province and foreign nations. Consequently it remained for many years after the founding of the first missionary establishments a locked garden to the outer world. Once in a while, however, a foreign ship, on some scientific errand bent, put in for stores or repairs. So, in September, 1786, there dropped anchor in the port of Monterey, the ships of the French explorer, Count de la Pérouse. These vessels would seem to have brought to California the first professional botanists to set foot on the land. The name of one recorded in La Pérouse's narrative was Collignon; but as the expedition was subsequently wrecked in the South Seas, perhaps the collection never reached France. "Our botanists," La Pé-

rouse says, "did not lose a moment in adding to their collection of plants, but the season was very unfavorable, the heat of summer having entirely dried them up, and their seed being scattered on the ground." Those which they thought they knew were "the common wormwood, sea-wormwood, the male southernwood, mugwort, Mexican tea, Canadian goldenrod, millfoil, deadly nightshade, spurry and water mint." This offers a pretty puzzle to the curious plant lover familiar with the native flora of California, and I prefer to leave to such the problem of finding out what plants Monsieur Collignon really found at Monterey.[2] La Pérouse had, before reaching California, visited Chile, and he brought with him from that country some native potatoes, of which he tells us he made a present to the missionaries at Carmel near Monterey. No doubt the Padres planted some of them, and probably it was in this way that potato culture originated in California.

Five years later, in the autumn of 1791, the ex-

[2] According to Dr. W. L. Jepson, in *Erythea*, September, 1893, a few seeds collected by Collignon at Monterey did reach Paris and were sown in the Jardin des Plantes. The result was an herb new to Europe, to which the name *Abronia umbellata* was given. This would, therefore, appear to be the first California plant to have been scientifically described. It is a pink-flowered denizen of seashore sands throughout the length of the State, and is one of several species popularly called "sand verbena."



By this shady brook, a stone's throw from the desert a fine orchid (*Epipactis gigantea*) is growing. A seedling Washington palm at the back

pedition of the Spaniard Alejandro Malaspina, in search of the supposititious Northwest Passage, touched at the ports of San Diego and Monterey. With it was the Bohemian Thaddeus Haenke, a botanist who had been collecting extensively in South America. Specimens were obtained by this expedition of California's two most characteristic oaks—the valley oak (*Quercus lobata*) and the coast live oak (*Quercus agrifolia*).[3] It would seem, too, that Haenke was the first botanist to collect specimens of the redwood. The last named tree was made known to science, however, from specimens received from other hands, those of Archibald Menzies, a Scotch botanist attached to the exploring expedition of the Englishman, Captain George Vancouver. Both Haenke and Menzies collected their specimens from apparently the neighborhood in which the Spanish pioneers of 1769 had first noticed the redwood.

Vancouver made two or three stops at different times at California ports. The first was in November, 1792, when he spent some time in the harbor of San Francisco, and he has left a record of what was probably the first Anglo-Saxon picnic on California soil. He had secured permission from the Spanish

[3] In the language of Spanish-Californians the valley oak, which is deciduous, is called *roble*, and the live oak, *encino* or *encina*. These words are not infrequent in Californian geographical terms to-day.

authorities to make a horse-back trip to the Mission at Santa Clara, some forty miles south; and it is interesting to read of the Englishman's delight at that time in a region which is still famous for its pastoral and sylvan loveliness.

"About noon," writes Vancouver, "we arrived at a pleasant and enchanting land situated amid a grove of trees at the foot of a small hill by which flowed a very fine stream of excellent water. This delightful pasture was nearly enclosed on every side and offered sufficient space for resting of ourselves and baiting our cavalry. The bank which overhung the murmuring brook was well adapted for taking the refreshment which our provident friends had supplied; and with some grog we had brought from the ship (spirits and wine being scarce articles in this country), we made a most excellent meal; but it required some resolution to quit so lovely a scene of beauty which was greatly heightened by the delightful serenity of the weather."

That was November 20, 1792. Proceeding somewhat further the Vancouver party entered a country which, the record tells us, "we little expected to find in this region. For about twenty miles it could only be compared to a park which had originally been closely planted with the true old English oak; the underwood that had probably attended its

early growth had the appearance of having been cleared away and had left the stately lords of the forest in complete possession of the soil, which was covered with luxuriant herbage and beautifully diversified with pleasing eminences and valleys; which with the range of lofty mountains that bounded the prospect, required only to be adorned with the neat habitations of an industrious people to produce a scene not inferior to the most studied effects of taste in the disposal of grounds." Vancouver was looking upon what was a very common sight throughout a large part of California in primitive times, and a sort of landscape that is by no means yet cultivated out of existence—natural open groves of the stately coast live-oak trees which have from the first been the delight of all travelers in the State. Often herds of grazing horses and cattle, and of wild deer, helped the likeness to the parks of the Old World nobility.

The Man of Grass, Old Curious and Fremont

It was not until 1831 that any adequate study of California plants upon their native heath was made by scientific collectors. Up to that time the few visiting naturalists had confined their explorations to places near the coast, and as the time of their stay was usually short, and, with curious unanimity, almost always in the autumn, when plant

life in California is more or less dormant—they really secured little more than a few snatched fragments and gained no adequate conception of the floral Eldorado, whose bounds they had entered. The dried specimens were carried back to Europe to be laid away in the herbaria of scientists, while such seeds as were collected were sown in botanic gardens. By and by the beauty and novelty of these domesticated Californians began to arouse a desire for further exploration, both in the interest of pure science and for the enrichment of European gardens. So in 1825, the London Horticultural Society despatched to the Pacific coast, one David Douglas, a Scotch gardener with a wide knowledge of plants and an abounding love for them. He sailed around the Horn, and, arriving at Fort Vancouver on the Columbia River, made that his headquarters for excursions into the wilderness of what is now the State of Oregon. To him the world owes the first adequate descriptions of the magnificent coniferous forests of the Coast.

Douglas returned to England in a year or two, only to start westward again for the especial purpose of investigating the flora of California, and in late December of 1830 he landed at Monterey. California in those days was anything but a free country and outsiders were *personae non gratae.*

Douglas's request to explore the interior of the province was so fraught with suspicion to the Mexican authorities that fully three months were wasted in this land of mañana, before permission was secured to extend his excursions inland. This exasperating delay, however, enabled Douglas to make thorough examination of the country within easy access of Monterey, and carried him to the spring months when the California countryside attains the full glory of wild bloom. His collections far outnumbered all that all his predecessors had taken home and amounted to a revelation, including as they did numerous genera of plants never before known to science and hundreds of species. The first flower he took in hand, he tells us, "was the beautiful wild gooseberry (*Ribes speciosum*), a flower not surpassed in beauty by the finest fuchsia;"[4] though another had found this before him. The same day, however, did bring a brand new discovery in the shape of a little herbaceous annual destined to become one of the best beloved of European garden flowers, *Nemophila insignis*. "A humble but lovely plant the harbinger of the California spring," Douglas thought it. This is the charming wilding known to every California flower lover as Baby-Blue-Eyes.

[4] Which it resembles.

These explorations in a wilderness country, with scarcely ever the sight of a white man's face, were full of hardships; but though checkered with discomforts both of heat and cold, of drenching rains and a sun "as hot as Arabia," with accidents to his specimens which were sometimes entirely lost in crossing streams, and wounds to his own body as he worked his way through pathless wastes and forests, there was full compensation in the joy of continual discovery. Almost every day brought its new species of herb, or shrub or tree. It is the trees of California and Oregon that insure an immortal fame to this intrepid Scotchman. He was the discoverer, under very exciting circumstances of the queen of California pines, *Pinus Lambertiana,* the sugar pine. This tree bears within its huge cones, large edible seeds, a few of which Douglas had caught sight of in an Indian's tobacco pouch, and he could not rest until he had hunted up the trees from which the seeds had come, for he knew that they represented an undescribed species. After many hardships he succeeded in locating a number of the great trees in a forest, but the cones, of which he was anxious to obtain specimens for shipment to Europe, were suspended from branches a hundred feet above the ground. To reach these by climbing was impossible, as the trees

were mammoth of their kind,[4] and to cut such down, was of course equally out of the question. The alternative was a method practised at the present day by some seekers after these pine-seeds—shooting them off with a rifle. In this way, Douglas managed to clip off three cones, when a party of armed Indians in war-paint appeared upon the scene, attracted by the reports of the gun.

"To save myself by flight was impossible," writes Douglas, "so without hesitation, I stepped back about five paces, cocked my gun, drew one of the pistols out of my belt and showed myself determined to fight for my life. . . . Thus we stood, looking at one another without making any movement or uttering a word, for perhaps ten minutes, when one at last who seemed to be the leader, gave a sign that they wished for some tobacco. This I signified that they should have if they found a quantity of cones. They went off immediately in search of them, and no sooner were they all out of

[4] The scene was southwestern Oregon, some 50 miles north of the California line, where the sugar pine has reached a remarkable development. Douglas records one as 57 feet in circumference at 3 feet above the ground. "There were giants in those days," and it is doubtful if any sugar pines so large have escaped the lumberman and the latter day lightning. John Muir gives the dimensions of full-grown specimens as commonly about 220 feet high, and from 6 to 8 feet through near the ground. Occasionally individuals of twice that thickness may be encountered.

sight than I picked up my three cones and some twigs of the trees and made the quickest possible retreat . . . to the camp."

In such picturesque fashion, were the first seeds of what is perhaps the noblest of all pines procured for European planting; but the tree with which Douglas's name is particularly associated is the Douglas spruce or fir—*Pseudotsuga Douglasii*—which is common in all the coniferous forests of California, but attains its best development in Oregon and Washington. It is the lumberman's Oregon pine used extensively in building throughout the Pacific coast. A variety with larger cones, peculiar to Southern California, is locally known as big-cone spruce.

To the Indians, with whom Douglas in his wilderness wanderings often came in contact, the industrious gatherer of leaves and flowers was a subject of considerable curiosity, and Indian fashion, they gave him a descriptive nick-name, which meant "the man of grass." He left California in 1832, to meet a tragic death in the Sandwich Islands. While botanizing there he fell into a pit dug to trap wild animals and was gored to death by a savage bull which had fallen in before him. When Douglas's mangled remains were found, a dog that had

Photograph by Geo. Wharton James

Monterey cypress, Cypress Point, near Monterey, Calif.

been his companion, still guarded a bundle which his master had left upon the ground near by.

In that classic narrative of the sea, "Two Years Before the Mast," Richard Henry Dana has more or less to say about the California coast as he went up and down in the little brig *Pilgrim*, gathering hides. But his interest was not in plant life, and we search in vain for any light upon that subject in his books. We do, however, get an interesting little picture of one of the most famous of American botanical explorers, Thomas Nuttall. Nuttall was a Yorkshireman, who about the year 1810, emigrated to the United States. He traveled very extensively in this country, and in 1836 arrived in California, homeward bound from Oregon. Securing a passage on the Dana hide-drogher, he made stops at Monterey, Santa Barbara, San Pedro and San Diego. It was at the last port that Dana came in contact with him, when both were preparing to sail for Boston on another ship. Nuttall, it seems, had been a professor at Harvard when Dana was a student there, and the latter's account of their re-meeting in California is rather amusing. "I had left him," Dana writes, "quietly sitting in the chair of botany and ornithology in Harvard University, and the next I saw of him he was stroll-

ing about San Diego Bay in a sailor's pea-jacket, with a wide straw hat and bare feet with his trousers rolled up to his knees, picking up stones and shells." The sailors considered him something of a joke, calling him "Old Curious," and believed him rather out of his mind; but he knew his business, and his few weeks' stay in California led to the discovery of a large number of plants of which the world had been in ignorance before that. His name is enshrined in *Nuttallia cerasiformis,* a charming plumlike shrub of the Coast Range, and in California's beautiful tree-dogwood, *Cornus Nuttallii,* besides many another species of interest more to botanists than the laity.

Under the Spanish and Mexican régimes, California was always wild, save in so far as there was cultivation close to the Franciscan missionary establishments. With the coming of the country under American domination, the usual change set in that follows the plow the world over, though it was not until the transcontinental railways linked the Pacific with the Atlantic that the curtain actually rang down on California pastoral, and the State's modern epoch was born. The preliminary surveys for the Pacific railways were numerous and began in the 1850's. Each surveying party was accompanied by a naturalist or two, whose names as

well as their leaders' live to-day in the botanical appellations of many a familiar California plant that they discovered. The discussion of them, however, would be in the main more appropriate to a scientific monograph than the present work; but I cannot refrain from reference to one picturesque figure who, in the last days of Mexican supremacy, dropped down from the Sierras into California and was interested alike in her politics and her flora—John C. Fremont.

In the spring of 1844, Fremont in command of a motley exploring party made up of trappers, soldiers and Indians, arrived at Sutter's Fort on the Sacramento River, and after a short stay for rest and repairs, proceeded southward along the great central valley of California, and crossing the Tehachapi Mountains at the valley's southern end, passed from the territory eastward across the Mojave Desert. Fremont was no dry-as-dust observer, and his journal is replete with vivacious descriptions of a country that seemed an Eden to those explorers, lately from the alkaline stretches of a Nevada desert and from the snowdrifts of an unbroken Sierra pass. In the cañon of the American River, before reaching Sutter's, he notes the presence of "a new and singular shrub. . . . The body and branches had a naked appearance as if stripped

of the bark, which is very smooth and thin and of a chocolate color, contrasting well with the pale green of the leaves." There is no doubt about that being the shrub which more than any other, is capable of arresting the attention of the traveler even to-day in the California mountains—the famous manzanita. In the open valleys the neat groves of live oak, which had stirred earlier travelers to admiration and thoughts of home, were to Fremont, too, like orchards in an old cultivated country. An interesting entry in this journal, is of meeting with the pretty rosettes of the filaree (*Erodium cicutarium*), which Indian women were gathering into their conical burden baskets to be consumed as food. That was in an unfrequented part of northern California and seventy years ago, and it makes one wonder if this pretty pasture plant may not be really indigenous to the State instead of introduced from Europe, as the botanical brethren would have it.

In those heavenly days of early spring the San Joaquin valley was gay with wild flowers, and some of the creek banks absolutely golden with California poppies. In some of the arroyos, giant lupines grew—one may still find them—twelve feet high, and clustered so that three or four plants together formed a huge bouquet ninety feet around, the

whole summit covered with spikes of glorious fragrant bloom. Threading such flowery thickets, the cavalcade would be quite hidden in beauty and fragrance, from which it would emerge into sunlit plains of verdure set with live-oaks, the ends of whose branches in many cases rested on the ground, so that the whole crown of the tree formed somewhat more than one-half a sphere. Under these leafy tents, as well as in the sunny interspaces, wild flowers blossomed.

By mid-April Fremont reached the southern end of this great valley which was destined to become soon the granary of California, and climbing the rough sides of the Sierra came in sight of the desert. Here he beheld, at one glance, the two diverse pictures which California presents to-day, and which contribute greatly to the fascination of travel within its borders. Behind lay the verdant valley of the San Joaquin, fed by living streams whose sources were in glaciers and springs of the Sierra Nevada; and ahead stretched the sandy, volcanic wastes of the Mojave Desert—the parched *llanos* where as his Indian guides told him, "no water is, no grass, nothing. Every animal that goes there dies." It was Fremont's business, however, to make a way even if there was none, and descending into the desert, he crossed to the north-

ern slope of the great San Gabriel range, which skirting, the party managed with less hardship than might be expected, to reach the "Spanish trail" that led from Los Angeles to Sante Fé. Here, their faces toward home, we may leave them—a picturesque party, the humor of whose appearance was not lost on Fremont, himself. It stretched over a quarter of a mile from van to rear guard, and included Americans, French, Germans, and Indians, everybody bearing firearms and speaking four or five languages at once. A hundred half-wild horses and mules, besides pack animals, the baggage and the horned cattle, were clustered in the center of the caravan, with scouts ahead and on the flanks, so that "we looked," as their gallant leader puts it in his quaint Southern way, "more like we belonged to Asia than to the United States of America."

There is a small tree, somewhat resembling a fig tree, peculiar to the foothill region of the Sierra Nevada, that blooms in May and June with so prodigal an expenditure of yellow mallow-like flowers, that the dry rocky ridges which it inhabits—both those overlooking the great valley and those that give upon the desert—seem set with tents of gold. The mountain folk call it slippery elm because of its mucilaginous bark. It is, however, too rare a tree to be made to shine by any re-

flected light, being the only species of a genus indigenous nowhere in the world outside of California; and it is juster, I think, to call it by the name which John Torrey, its first botanical describer, gave it—*Fremontia Californica*—in honor of "The Pathfinder," who discovered it and whose indefatigable labors brought to light so much of California's floral riches.

II

TREES OF THE CALIFORNIA WAYSIDE AND WHERE THEY CAME FROM

AMERICANS, as a class, have been slow to realize the value of their native sylva for ornament and shade on cultivated grounds, and while for three-quarters of a century the parks and estates of the Old World have drawn upon the magnificent forests of the Pacific Coast for types of arboreal beauty, Californians, when they plant a tree, generally plant an exotic. As the eastern visitor in California motors over the thousand and one fine roads that now gridiron the State, or saunters along the shady avenues of any one of a score of her little sylvan cities, he is quickly struck with the strangeness of the trees, among which is hardly one to remind him of his eastern home. In fact, California has ransacked the ends of the earth for her wayside trees. China and Japan, Australia and India, Chile, Peru and Brazil, the Mediterranean regions of Europe, Asia and Africa and the islands of the Pacific—all these and more have been drawn upon.

The hospitality of her soil and climate seems boundless, and the tree lover finds himself in California in a paradise where he can study in the open, as in a great botanical garden, individuals of practically every important arboreal family of the whole world from the tropics to the Arctic circle: a paradise where palm and pine grow side by side.

Palms and Peppers

The first to attract the attention of most visitors are perhaps the palms—those princes of plant life, as Linnaeus considered them. In some eyes these tropical aristocrats seem somewhat out of keeping with the miscellaneous company in which they find themselves in California, but as a matter of fact, Nature has set the seal of her approval upon the association since one species extensively planted both as a street tree and for ornament in private grounds, is a native of the State. This is the *Washingtonia filifera* of botanists, the generic name being in honor of the First President. It grows indigenously in cañons and alkaline oases of the desert portions of San Diego and Riverside counties. The great spreading leaves look like immense palm-leaf fans, and the tree is popularly known as the desert palm, or California fan palm. The discovery of this noble tree is credited to the exploring

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party of Major Emory while traversing in 1846, the Colorado Desert of California en route for San Diego. In his company were some Florida campaigners, who hailed the trees as old friends, believing them to be cabbage palms, or palmettos—a very different tree in fact, though outwardly resemblant. Many a tourist on his first visit to California makes the same not unnatural mistake. The *Washingtonia* is extensively grown in Europe from seeds originally procured in California.

Another of the tribe very commonly planted and somewhat resembling the *Washingtonia,* is the so-called windmill palm (*Chamaerops excelsa*), which has slipped in from China, in spite of California's anti-Chinese sentiments. The shape of the trunk constitutes a characteristic by which the non-botanical may distinguish it from the *Washingtonia.* The latter narrows upward from a robust butt, while the trunk of the windmill palm is disposed to be top heavy, thickening upward from the somewhat attenuated base. It is, moreover, rather heavily clothed with a tangle of dark fiber.

The sharp-eyed, even if not versed in botany, soon notice that the palms naturally separate into two general divisions—those whose leaves, as in the case of the two species just mentioned, are in the form of fans, and those whose foliage is feather-shaped.

A pepper tree walk

To the latter division belongs the date palm of tropical Asia and Africa, now being extensively cultivated in certain fertile valleys of the California desert for its fruit. It was among the first foreigners to be planted on California soil, and fine old specimens set out originally by the Franciscan missionaries still stand near a few of the ancient Missions as well as on some of the older ranches in the central valleys. As a wayside tree, however, the true date palm, useful as it might well be for this purpose, has never been used in California; though a kindred species more robust in habit and without edible fruit, the Canary Island date palm (*Phoenix Canariensis*) is one of the most familiar exotics in the State. A veritable gushing fountain of feathery leaves, is one of these trees when young—the foliage arching out and downward until the tips touch the ground—a habit which causes each plant to occupy so much ground before the growing trunk has lifted the crown into the air, that this variety is more suited to lawns or private avenues, than to public thoroughfares, unless the latter are of exceptional width. More common by the wayside are the airy plumes of *Cocos plumosa,* a Brazilian cousin of the cocoanut palm, of rare grace and loveliness. In the same company are often seen the slender dracaenas or cordylines of New Zealand, persistently regarded

as palms by the "man in the street," but one needs only to take a good look at the long narrow sword-like leaves to know they are not palms.

The fruiting of the palms that one usually sees in California is a noteworthy first sight to the visitor. The individual blossoms are small, but are borne in tight clusters, each like a huge hand enveloped in a yellowish mitten, thrust out from the base of the leaf stalks. By and by, the compact mass emerges from its envelope and divides into a pendulous panicle of bloom, each blossom succeeded in due time by a berry-like fruit. This varies in color with the kind of palm—purple, red, orange, or yellow—and consists usually of a fleshy pulp, spread thin over a comparatively large amount of stone. In the case of the Canary Island palm, the fruit very much resembles the date and may be nibbled at, but for serious consumption it is not at all in the class of its famous cousin, the true date.

Quite as conspicuous as the palms in Southern California, is the so-called pepper tree (*Schinus molle*), whose graceful, evergreen leafage droops in a way to remind one of the weeping willow of the East. Not the least of its charms both to visitors and residents, are the bunches of pretty red berries which glow amidst the foliage through a large part of the year, though most noticeable in the winter.

The tree is dicœcious—that is, it bears staminate and pistillate blossoms on different trees; which accounts for a fact puzzling to the non-botanical, namely, that not all the trees are berry bearing. In country and in town alike, the pepper lines miles of waysides and in many cases the crowns meet overhead, so as to form long tunnels of greenery, somewhat in the way that old elms do in New England streets. People who are not satisfied short of perfection, are disposed to grumble at the pepper tree because of a disposition to drop its leaflets too freely in wet weather, so contributing rather markedly to the dirtiness and slipperiness of sidewalks. A more serious charge is hospitality to certain scale insects, which are the special bane of the citrus fruit industry in California. The control of scale, however, is now pretty well understood in the State, and systematic spraying, which in many California districts is seen to by the local governmental authorities, removes to a great extent this objection to one of the most beautiful and popular of introduced shade trees.

Widespread as the cultivation of the pepper tree is in California, no one seems to know when and how it became established there. The memory of the oldest inhabitant is not long enough to recall its introduction, for the tree was there before he came,

and no documentary record of its advent has as yet been unearthed. It is found wild in the sub-tropical regions of Peru and adjacent countries of South America, and Mr. Chas. F. Lummis, well known authority on all matters pertaining to the Southwest, tells me that Don Antonio de Mendoza, the first Spanish viceroy of Peru, sent the tree up to Mexico about the year 1540. Thence it was introduced into Europe under the name of Peruvian mastic or mulli tree, and was growing in many European gardens before the sixteenth century was out. Ever since its introduction into Mexico it has been popular as a shade tree there, and has spread to such an extent as to make even our veteran botanist, Dr. Asa Gray, question if it was not indigenous in that country. It seems reasonable to believe that an ornamental tree so well distributed throughout Spanish-speaking countries, valued for its shade and known to be of quick growth, should have been introduced by the Franciscan Missionaries into California to provide shade around such of their newly founded establishments as needed it. The direct evidence of this is wanting, but Spanish-Californians will assure you that such was the fact. There is at the Mission San Luis Rey, near Oceanside in San Diego county, a very large specimen, which local tradition credits with being the first of

its kind grown within the borders of the State. Mrs. Mary M. Bowman of Los Angeles has informed me that when Don Juan Warner, famous in the early history of California, stopped at that Mission in 1831, the Father Superior showed him a bed of queer plants growing in the Mission garden. The Father did not know what the plants were, but said that a sailor on a vessel from the southward had once given him a package of the seeds, unnamed. The packet was overlooked for some years, but finally the Father had the seeds sown out of curiosity to learn their nature. They proved to be pepper trees, or as the Spanish-Americans called them at that time and still do, *arboles de Peru,* trees of Peru. As they grew taller the Padre had them set out in a row in front of the Mission—all but one, which he left in the original garden bed. Visitors and Indian vaqueros, coming and going, hitched their horses to the trunks; they were abused and broken, and one by one all died, except the original in the garden, which still stands, though the freezing weather which visited California in January, 1913, killed the branches back to the main trunk. The damage, however, was only temporary, and the veteran tree has since started in vigorously to regain its former great spread. From this tree and its companions, the tradition goes, came the seeds

from which others grew throughout California—but this is only a tradition.

Pepper is a misnomer for *Schinus Molle,* as its relationship is not at all with the pepper of commerce, but with the sumacs, of which the members best known to Easterners are the little shrubs whose brilliant orange and crimson leaves add so materially to the glory of autumn landscapes on the Atlantic seaboard. The Schinus berries are, indeed, peppery to the taste and turpentiny withal, and the South American Indians with the aboriginal genius for turning the most unpromising material to account, are said to have concocted a drink by infusing the berries in water and pressing out the juice, the result being a wine-colored beverage the qualities of which any one curious in such matters can easily test. The wood is despised by most Californians of to-day, but the South Americans are said to have discovered the heart wood to be solid enough for use as pillars, axle-trees and corner posts of dwellings. Pepper tree leaves abound in a pungent resin and it is a stock statement in books that they have an entertaining way of gyrating when thrown in water; but I must confess that though I have experimented with them a number of times, they stay as motionless as alligators for me.

The Eucalypts

Of even greater importance than the pepper tree for wayside adornment, and of far greater influence upon the aspect of the countryside, is the eucalyptus or Australian gum tree. Its tall spires of verdancy, swaying gently in the wind like giant grasses, are conspicuous summer and winter from San Francisco to the southern limits of the State, and harmonize so well with the landscape that it is hard to realize that they are of man's planting, not Nature's. They are indigenous to Australia, where they form vast natural forests. There are about a hundred and fifty species—not a thousand, as some enthusiastic Californians will be apt to tell you—and of these perhaps sixty may be met with in cultivation to greater or less extent within the limits of our Southwest. One species (*Eucalyptus amygdalina*) sometimes attains in its Australian home the dizzy height of over four hundred feet, thus far overtopping any living specimens of our own mammoth Sequoia, but it lacks the girth and all-round hugeness that insure to the latter the title of being *the* Big tree.

"They tell me," said a lumberman, whose interest in trees was mainly a matter of board measure,

"that some of those Australians turn out logs over two hundred feet long and thirty in diameter at the butt. Do you get that? That's a clear stick of hardwood timber pretty near half as high as the Washington Monument, standing on the same amount of ground as a snug little bungalow. Now what do you know about that? And we can grow them in California. Got 'em started already."

Of all trees in the West, the eucalypts are the most rapid of growth, and in a general way accomplish as much in twenty years as an oak in a century. Of course the rate of growth depends largely upon local conditions—soil, moisture and climate—but in general terms, the species most commonly planted in California are good for their twelve or fifteen feet the first year after setting out—at which time they are usually four or five months old and the size of a lead pencil—and after that they can be counted on to add from five to eight feet annually to their score. Five-year-old blue gums forty to fifty feet high are by no means uncommon, and any old resident can show you trees five feet in diameter at the base whose crowns rise nearly or quite a hundred and fifty feet into the air, and are not yet thirty years old. There is always a balsamic fragrance noticeable about a "gum grove," which has given force to the popular belief that the presence of these

An avenue of blue-gums (*Eucalyptus globulus*). The trees are about 35 years old

trees is enmity to malaria. The disposition of science, however, as so often happens in matters that are of popular acceptance, is to throw cold water on this cheerful view; yet the fact remains, that many localities previously malarial both in the New World and the Old, are no longer so since eucalypts have been planted and have sucked up the spots of moist stagnation.

The first importation of eucalyptus seeds into California was of too little moment at the time to be thought worthy of record, but Mr. A. J. McClatchie, the author of an exhaustive monograph on the eucalypts in America, published a few years ago by the United States Department of Agriculture, is disposed to credit a Mr. Walker of San Francisco with that unwitting act of philanthropy in 1856, shortly after their importation into Europe and Africa. It is not likely, therefore, that there is a single eucalyptus in California over fifty years old. Planted here at first more as a curiosity than anything else—for their magical rapidity of growth made them seem a sort of arboreal Jack's beanstalk—the trees attracted comparatively little notice until about 1875. Then Ellwood Cooper of Santa Barbara, who had in the meantime wintered and summered a number of different species for several years, and had some fifty thousand speci-

mens growing on his ranch, began to advise their extensive cultivation as an addition to the State's resources. Since then they have been planted so extensively in Central and Southern California, in valley and on mountain side, by irrigation ditches and on stretches of desert aridity, that the whole face of the landscape in many sections has been changed. Set as windbreaks, the eucalypts have made many a shifty plain agriculturally possible that was worthless before; and as a fuel producer in a region of scant forest and no coal, they have been a gift as of the very gods. The lusty young trees are ready for the ax at five or six years old and the shorn stumps quickly send up vigorous shoots eager for a fresh whirl at life. These are thinned out and in another half dozen years, three or four will be ripe for cutting again. The green leaves and branches are filled with an inflammable oil, and one of the sights for tenderfeet, is the feeding of stoves and furnaces with such fresh trimmings. All the species of eucalyptus are hardwood trees, and while the hardness is of various degrees in the different species, all are in the same general class as hickory, walnut, oak and even mahogany, and the uses of the wood are accordingly manifold.

Eucalyptus blossoms are among the most curious of flowers. Different species bloom at different

seasons, but in California one is sure to see some display as early in the year as January. While sometimes exceedingly showy in tones of red, the flowers are usually white or cream color and look, far above us in airy billows of foliage, like flecks of foam or a sprinkling of snow. After a storm we may pick from the ground a flower-laden twig that has been blown down and examine the wonderful creations. The bud is a tight-closed case varying in size from a pea's bigness to a walnut's.[1] At its appointed hour it neatly splits off the lid and from the interior as a jack from his box, appears the flower, which is nothing but a bristling mass of countless glistening stamens, subtly fragrant and delicate as the weave of fairy hands. The flowers are produced sociably in umbels, or panicled clusters, and in some species continue to open over a period of several months and hum with wild bees which haunt them for their nectar. The woody seed vessels are as interesting in their way as the blossoms, and are of various shapes and sizes according to species—smooth or wrinkled or ribbed, and fashioned in form of tops, cups, pills, eggs, bells, urns or what not. To collect the different sorts in one's rambles, is almost as fascinating as collecting old

[1] The word eucalyptus means "well-concealed," in reference to this complete hiding of the floral organs in the box-like calyx.

china, and by people of utilitarian bent, they may be turned to practical account and strung into necklaces, portière chains and so on. Some kinds are an inch or an inch and a half in diameter, and lovers of the Lady Nicotine have been known to favor such for pipe bowls.

The best all-round eucalypt for California, and the one most frequently met with, is the blue gum (*E. globulus*), whose wood, hard as hickory, is useful not only for fuel, but for making a variety of things from hoe handles to wharf piling. It is a kingly tree in its proportions, attaining in its native Australia a height of 300 feet; and in its nature it is no less large—tolerant to an unusual extent of adverse conditions. The ability to withstand a considerable degree of frost as well as heat, and to thrive alike in moist soil and arid, is largely responsible for its extensive culture. Possibly 150 feet is the high mark of the blue gum's growth so far in California. Country roads lined on both sides for thousands of feet with such colossi, dripping dappled shadows and happy bird notes, and sprinkling upon the traveler benedictions of fragrance, are among the unforgettable pleasures of a California outing. Blue gum saplings, as well as the young sprouts of old trees, are remarkable for their powdery-surfaced, bluish leaves oval in

shape borne on four-angled stems. With age, the foliage takes on an entirely new aspect. The fashion of youth is discarded for slender leathery leaves of a sober green, sickle-shaped and hanging stringily with one edge always towards the outer light, from branches whose former uncompromising squareness the contact with life has reduced to easy-going roundness. It is from the fresh leaves and twigs, principally of the blue gum, that the famous oil of eucalyptus is extracted; and blue gum leaves made into teas or poultices, are among California household remedies for troubles of the respiratory organs.

Shade Trees That Are Leafless and Others

Also to Australia, California owes her acacia trees, of which a score of evergreen species adorn her streets, parks and roadways. They are famous for their showy flowers, which though individually tiny are borne in myriads of spherical clusters, and in some varieties, as *Acacia Baileyana* and *A. mollissima,* the blooming is so exuberant that the foliage is all but hidden under a rippling sheet of gold during the time of inflorescence. This with most species is in late winter and spring, and a pretty sight on California highways at that season is afforded by carriages and automobiles decorated with

long, plumy sprays of acacia bloom, like so much sublimated sunshine. At least one species, the willowy looking *Acacia floribunda,* flowers throughout the year—though temperately. After I had become somewhat used to the sight of acacias, and thought I had begun to know them for acacias offhand, I realized one day, that like the palms, they fall into two classes as to leaves—one sort with pinnate, or feather-like foliage, and the other, with leaves that are entire. To the latter division belongs the blackwood acacia (*A. melanoxylon*), extensively planted along streets in some sections of the State because of the dense shade cast by its rather somber crown. I mentioned the fact of my discovery in leaves to my neighbor the Professor, as we stood chatting one summer day beneath the grateful shadow of a blackwood.

"My boy," he observed with an indulgent smile, "you are quite wrong. Acacia leaves are always pinnate, when there are any. Many species are leafless. This blackwood that we stand under with umbrage so thick that it would turn a hard shower, is absolutely leafless. You think that's another California big yarn, but it's hard fact."

He snapped off a twig, and pointed to what certainly looked like a flat, straight-veined, straight-

edged leaf—the counterpart of a million more that made up the crown of the tree.

"These things that you take for leaves," he went on, "as you can see, are simply the foot stalks, expanded to do a leaf's duty. The true leaf either never develops or if, as may be noticed in saplings, the leaf does set, it soon disappears. These trees with the leaf stalks doing the leaf's work, always remind me of a young widow left penniless with a lot of children, and forced to go into a man's business to bring up the family."

Australia again is represented on California streets in the form of the so-called silk oak—*Grevillea robusta*—beautiful at all seasons because of its richly green fern-like foliage, but presenting its most striking appearance in late spring, when lighted up with its strange rusty-orange trusses of bloom. It is a tree of ancient lineage, belonging to an order—the *Proteaceæ*—which includes the oldest flowering plants on earth, the Adams of the vegetable kingdom. The Grevillea is one of several trees growing in the open on the Pacific Coast, that are prized in colder countries as pot plants for indoor decoration, such as the rubber and the Norfolk Island pine—because they are too tender to stand any considerable degree of frost and cannot there

be grown outdoors. And still another Australasian now and then greets us by the wayside, but of very different aspect, the she-oak or beef-wood (*Casuarina quadrivalvis*). It is a queer, gray, piney-looking tree, and you will probably pass it by at first as a poor variety of conifer. It is worth knowing, however, for it is a most exclusive tree, the genus being quite alone in the world, a family to itself; and despite its looks, its relationship is not at all with pines, but rather with birches, as you will find if you carry a few of the tight-fisted little cones home and lay them on the mantel, where they will soon open and surprise you by scattering tiny birch-like winged seeds about. It is, moreover, without true leafage; what passes for leaves being slender, short-jointed stems, that pull apart at the joints as the stems of horse-tails or equisetums do. The form and arrangement of these curious stems on the tree somewhat suggests the plumage of the Australian cassowary, to which fact the genus owes its botanical name, *Casuarina*. The tough heartwood of the trees is as red as beef, whence the popular name beef-wood, and is the material out of which the Tasmanian aborigines are said to have fashioned their shields in the good days of old.

"A walk along a California avenue is like a trip around the world," observed the Professor, as we

Blackwood acacia—a shade tree without true leaves. The photograph at the right shows the phyllodia which do service for leaves

started out for an afternoon stroll one winter day; "those palms over there, for instance, are from China, these peppers from Peru and the eucalypts from Australia. Those tall trees ahead of us, with finely cut feathery leaves, more like bird plumes than foliage, are jacarandas from Brazil, in some respects the most regal of our naturalized tree citizens. A jacaranda in June, when it is crowned with great panicles of flowers as blue as Italian skies, is a dream. But here is a row of natty little trees" —we had turned now into a side street—"that I love quite as much. These are camphor trees from Formosa. Pinch one of those black berries that are twinkling everywhere among the leaves, or one of the shiny little leaves themselves, and smell the liberated camphor. Yes, this is the source of gum camphor in the Orient, but it takes about thirty years, I believe, for the tree to be ripe for the business, so it is hardly likely that California will go in for it—that is too slow for Americans. What makes it a favorite here is first, its wholesome, cheerful appearance in all sorts of weather—dry or wet, hot or cold—and entire freedom from pests—maybe that's because of the camphor in it; and secondly, its wonderful beauty in early spring when the new leafage comes. Then the opening leaf buds suffuse the whole tree with an exquisite glow of

color—a sort of tender, poetic pink that awakens enthusiasm in the most phlegmatic. You cannot believe at a little distance that the effect is not due to myriads of flowers; but it's only leaves, and the color lingers in the new foliage for weeks. In age the tree develops marked branchiness, the great limbs flung about with all the dignified gesticulation of an old oak.

"But there is another tree I shall show you, that you are likely to mistake for the camphor at other seasons of the year, for it is grown extensively for street shade and fools every new-comer. It is the bottle-tree—*Sterculia diversifolia*—from Australia. The way to distinguish it from the camphor is to note its leaves, which in the bottle-tree are odorless and variously formed, some being entire but many of them cut into two or three fingers. Then the trunk is very different, being peculiar in having a broad base from which it tapers upward rather markedly, suggesting a certain type of bottle, though the name was given in the first place to another species, *Sterculia rupestris,* with a bulged-out trunk like one of those English soda-water bottles that won't stand up. There's a lot of bottled up usefulness in the *Sterculia* tribe—for it is a big family. There is an illuminant oil to be extracted from the seeds, and the seeds themselves of several

species have nutritive value. Then the inner bark both of the bottle species and its scarlet-flowered cousin the maple-leaved *Sterculia,* or Australian flame-tree, which we grow in California for ornament, too, is a tough waterproof fiber a couple of inches thick, that is good material for cordage and mats. The West Indian tree that chocolate comes from is of the *Sterculia* family, so you may take off your hat to the bottle-tree.

"As to coniferous exotics, California agrees well with a number. One of them is India's world-famous deodar, associated with her poets and mystics for centuries. It seems queer to find this denizen of Himalayan slopes up to ten or twelve thousand feet, perfectly at home at low altitudes in Southern California. As a matter of fact it is rather a tender tree in America and won't stand any great degree of frost. One of this State's most famous arboreal sights is an avenue lined on both sides with these magnificent conifers in Altadena. Unfortunately, the man who set them out did not make suitable allowance for the future growth of the trees, and planted them rather too close together for proper effect when mature, so that the trees are now crowding one another.

"Now here's another conifer that will interest you," said the Professor, stopping before an open

gate, and glancing into the avenue of a private estate, where some tall stiff leaved evergreens were growing, with poker like branches set in dish-like whorls.

"See anything familiar about those old hundred-footers? You remember the little Norfolk Island pines we used to buy in pots back East to put on the center table, and see that the furnace fire didn't go out overnight or they would freeze to death? Well, these are Norfolk Island pines, only out here the climate permits them to grow in the open, and grow they do. They are natives of one of the South Pacific Islands that Captain Cook discovered. *Araucaria excelsa* the botanists call this species. You might almost call it the Santa Barbara pine out here—that town is so fond of it. It is curious we have three species of *Araucaria* commonly planted in California and each is from a different part of the globe. Besides the one from Norfolk Island, there is one from Australia and the third is from Chile. They are all characterized by stiff, prickly leaves crowded along the horizontal or slightly drooping branches. The Australian species is *Araucaria Bidwillii* or bunya-bunya as the Australians call it. That is one across the way—that beautiful pyramid of green rising from the very

ground to a height of forty or fifty feet. The branches and leaves which spread like little wings from the stems are so dense it looks like a hard tree to climb, and by one of those curious twists which make popular nomenclature so unreliable, it is often called the monkey-puzzle tree, because of the supposed problem it offers the monkeys to thread its intricate interior. In point of fact, however, this name belongs to our third species, *Araucaria imbricata,* a native of the Chilean forests, a more open tree with snakey-looking branches, also planted quite extensively in California. It may puzzle the monkeys to climb it, for its leaves are exceedingly prickly, but I have been told the real puzzle is furnished by the tight, compact cones almost as big as a man's head. The monkeys' puzzle is to get these open in order to extract the seeds which are very delectable to the simian palate. The cones of all these *Araucarias,* in fact, contain edible seeds, and this led to the introduction of the Chilean species into cultivation in England. It seems that during Vancouver's famous exploring voyage around the world, and at a dinner given in Valparaiso to the explorers, some of the nuts of *Araucaria imbricata* were served. With the Vancouver party was the botanist, Archibald Menzies,

whose curiosity was aroused by the strange nuts, some of which he slipped into his pocket instead of his mouth, and from them raised the first specimens of this tree ever seen out of their native land."

III

PLANT IMMIGRANTS IN THE GOLDEN STATE

PLANTS are confirmed travelers and though handicapped in respect of locomotion even more thoroughly than the proverbial slow-going tortoise, many of them manage in time to accomplish long journeys, and some species have even circumnavigated the globe. Vessels plying between distant quarters of the earth are the means of carrying many wild seeds which cling to the packing of merchandise, or are hidden in dirt ballast. These involuntary plant immigrants dumped out in favorable soil and finding a tolerable environment, begin life anew in an alien land, and set about increasing and multiplying just as energetically as the human foreigner attacks his living in his land of promise. Then, too, useful or ornamental plants originally imported from other countries and established in gardens, often escape into the road or field and if conditions are favorable to a wild life, take to gipsying—their seeds being borne in time far and wide through the agency of birds, winds, running

water and the backs of animals; and in these latter days many are transplanted in railroad cars, on which they travel, tramp-like, without the formality of paying passage money. The Forty-niners' bean importations brought into Central California many a seed that had never been there before.

To the plant lover these introduced plants are in a class to themselves, and the practised eye picks them out from the native flora of the country, as one notes an Italian face or a German figure in the crowds of Broadway. Often they stimulate the fancy by their historical or literary associations. In the case of a large proportion of our native American plants, when we have labeled them with a couple of Latin names searched out in a botanical manual, their story is told; our country is too young for them to have become known to the people and to have been accepted as partners in the national life. These floral foreigners, however, that have taken out their naturalization papers, and are sturdily competing with the natives for a share in Columbia's sunshine and soil, are quite frequently plants with a known history and so are possessed of a human interest that lends an especial fascination to their study. In California such plants are of comparatively recent introduction; the great majority of them were unknown here half a century

Vine-embowered cottage once occupied by the author of "Ramona"

ago; a few date back to the days of the Padres. Many, as might be expected, are plants of the Mediterranean region, and have reached California by way of Mexico and South America in vessels that discharged at San Diego, Monterey or San Francisco. Thence they have spread gradually over the State. In early days the herds of cattle and horses and bands of sheep carried in their hairy coats many a clinging seed, which fell miles from its parent, and germinating in soil to its taste, grew to plants that bore other seeds which in their turn were caught up and conveyed still farther afield, until whole valleys were sown that a few years before knew no such plant.

The most remarkable case of this kind is perhaps the wild oat (*Avena fatua*), which though a native of Europe is the most abundant of California's wild grasses, and clothes the hills and valleys of winter and early spring with a green as vivid as Ireland's. Hittell, in his history of the State, says that as late as 1835 it was confined to the region south of San Francisco; then with the extension of white settlements to the north, the flocks and herds began to spread it northward. Twenty years later, in 1855, Dr. Newberry, the botanist of the Williamson Survey, stated that the greater part of the Sacramento Valley, as well as the San Joaquin and the

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unforested portions of the Coast Range, were covered hill and plain for hundreds of miles with an almost uninterrupted self-sown growth of wild oats, making a carpet as complete as the grassy covering of an Illinois prairie. Travelers of those early days speak of the remarkable tallness of this grass which they could bend and tie across the horses' backs, and in swales the growth was so rank that riders on horseback could not see one another ten feet away. To-day it grows in soberer fashion, a stalk of three feet being esteemed a high one. Although in one sense a weed, it is a valuable grass, affording a nutritious wild pasture appearing with the first rains of winter; and also makes good hay —at least in the estimation of Californians. Eastward it is more or less in disfavor. To the plant collector whose interests are more purely esthetic, the loose, trembling panicles of the blooming plant are extremely ornamental. A patch of wild oats at that stage of growth with orange-yellow poppies glowing here and there in the midst, makes a charming bit in Nature's wild garden, which may well be imitated by the arranger of cut-flowers within doors.

"The Pacific Coast," remarked the Professor one day with a twinkle in his eye, "is a land of paradoxes—the squirrels live in the ground; the rats

nest in the trees; the rivers flow upside down, and a man's wild oats are a crop worth harvesting!"

Mixed more or less nowadays with other grasses throughout California is the European wall- or mouse-barley (*Hordeum murinum*). Foxtail, Californians call it, and it is a serious nuisance when old because of the bristly floral spikes. These then break up, and the long awns are not only liable to make trouble in the mouths of animals, but they work their pestiferous way through people's clothing and into the cracks and openings of their shoes to the prodigious discomfort of the wearers. Still another wild pasture-plant, which by many botanists though not by all, is held to have been introduced from southern Europe, is the stork's-bill, a member of the geranium family (*Erodium cicutarium*), commonly known as pin-grass or filaree—the latter word a corruption of the herb's Spanish name *alfilerilla,* meaning a little pin. It carpets pretty much all of wild California out in the sun, that the wild oat has not monopolized, and is equally valued as pasturage. It is a pretty little plant that spreads its leafy rosettes, often tinged with red, over hundreds of miles of the winter earth. Soon after New Year's, little stars of magenta bloom begin to glimmer in the sod, and as the petals fade

there rises from each flower the long beak of the seed pod, whose resemblance to a pin has suggested the common name. With country children the alfilerilla is an especial favorite, as the ripe sharp-pointed seeds possess long wiry, twisting tails have a fashion of boring their way into one's clothing, while the horizontal tips of the tails revolve slowly like the hands of a clock—a trick very captivating to the childlike mind of all ages. When the seeds fall to earth, these curious appendages act as seed planters—the alternate dampening of the dew and the drying of the sun causing a rotary movement which drives the seeds into the ground. The red ants have a fondness for these seeds and carry them into their subterranean apartments, having first nibbled off the tails, which are often found lying in heaps outside the hills.

Mingled everywhere with the alfilerilla and wild grasses, is a clover-like plant with small blossoms that look like specks of gold. Examined closely, they are seen to be like pea blossoms. This is still another Old World plant of forage value, native to Mediterranean countries, though the date of its introduction is unknown. It is bur-clover, or *Medicago denticulata*. Possibly it owes its start in California to seeds that made the trip from Spain in Mission days in the wool of imported sheep. Many

a tender-hearted tourist, when the dry season has set in and California pastures are as brown as an eastern November, has had his sympathy awakened by seeing bands of cattle or sheep nosing over the clods of a barren field in an apparently hopeless search for feed. It seemed like a case for the Society for Prevention of Cruelty to Animals, but in reality the beasts were licking up the pods of the bur-clover. Curiously enough the stems and leaves of this plant, which is a close relative of alfalfa,[1] have little or no attraction for the animals; but the queer little coiled seed-pods about the size of peas and quite dry and prickly, are palatable to them and fattening.

The wild black mustard (*Brassica nigra*), which is an influential plant in the spring landscape, covering vast areas with rippling lakes of fragrant yellow bloom, is another naturalized foreigner. It has spread from inconsiderable beginnings, perhaps in Mission times, when it may have been sown in the

[1] Hay in California is usually not cured grass, but the dried stalks of the cereal grains, oats, barley and wheat (cut before fully ripe) and the leguminous plant alfalfa. The last, used in the Old World as fodder for at least 2500 years, was introduced into Spanish-America in the sixteenth century. Its culture on a large scale in California seems to have begun about 1854 from seed got from Chile, though it is incredible that the Franciscan Missionaries should not have introduced it in their day with other economical plants, and probably they did.

Franciscans' kitchen-gardens for its seeds. If so, it doubtless speedily escaped into the open, for there is a tradition that at the season of its vernal blossoming the old *camino real* which linked the Missions together, became every year like a golden chain from the mustard, which had sprung up in the Padres' footsteps. The plant is one of two or three whose seeds nowadays furnish the mustard of commerce.

"The seed is hotter than white mustard," said one of my California acquaintances, "it's red hot, and tons of it have been shipped out of the State; yet there's enough of it goes to waste every year in one county, I guess, to season the ham sandwiches of the world."

It frequently overtops the head of people on horseback, and a man afoot might lose himself in a thicket of it almost as completely as in a tropical jungle. There is good reason to believe that this vigorous plant is one with the New Testament mustard which from the smallest of seeds grew into a tree in which the fowls of the air found lodging, as myriads of them do in California to-day; for the self-same species has been cultivated for centuries in Syria where it reaches the height sometimes of fifteen feet. To the lover of delicate floral beauty for its own sake, the mustard makes a strong appeal,

and every spring it is exclaimed over by rapturous tourists and residents alike, who gather it by the armful for home decoration. It is one of the plants that have an assured place in American literature, as every reader of California's most popular romance, "Ramona," will recall.

The plants that people denominate weeds, are to a great extent foreigners which have confounded liberty with license and made a nuisance of themselves. The prevalent weeds of the Pacific Coast, the observer soon finds, are quite different from those on the Atlantic side of the Continent; and he is not long afield in California before he runs afoul of that Old World herb that our grandmothers back East used to cultivate in their gardens for its tonic and cough-subduing qualities—to wit, horehound. It was probably first brought to California in the early days of the American occupation, by some settler who liked to keep up the old practise of having a root of it in the garden for domestic emergencies. To-day it is one of the most widely distributed weeds in the State, taking possession of road-sides, old fields, vacant lots and pastures, and disputing with you the possession of your flower beds and truck patches. Late in the summer and in the autumn it is as annoying to the pedestrian as the beggar's ticks are in the East, its prickly calyces fastening

themselves to his clothing in the same fashion and as multitudinously. Superficial observers mistake horehound at long range for catnip—an error that pussy never falls into, for it lacks entirely the aromatic exhilaration of the latter herb, which curiously does not seem to take kindly to tramping in California.

Another weed that has become very troublesome in parts of California is a conspicuous thistle with large prickly edged leaves showily blotched with white, out of which rise purple flower heads. It is an immigrant from Mediterranean shores, where it is indigenous from Spain to Greece—*Silybum Marianum,* milk-thistle or Our Lady's Thistle. To the student of folk lore it is precious because of an Old World tradition that clings to it, in explanation of the white spots upon the leaves. These, the legend says, are the markings of drops of milk which fell from the Virgin's breast as she nursed the infant Christ. The plant's port of entry seems to have been San Francisco where it began to be noticed about 1853; and it is more abundant, still, in Central California than in the south. Mr. S. B. Parish, in an interesting and valuable contribution to our knowledge of the naturalized plants of California,[2] records its first appearance near San Ber-

[2] Published in *Zoë*, Vol. 1, No. 1, *et seq.*

nardino, about 1885. "The mottled foliage of the unknown waif," he states, "found favor in the eyes of the owner of the adjoining land, who carefully protected it from accidental destruction, to see what it would come to. It came in a few years to occupy almost all the road, and its early protector has paid for his mistaken charity, by assiduous and only partially successful effort to eradicate it."

Still another Old Worldling against which the Californians would like to enforce the exclusion act, is a tall umbellifer with finely dissected, threadlike leaves, and flat-topped masses of yellow flowers, the whole plant abounding in the fragrance of licorice. By one of the perversions which attends so many popular names, it is generally called sweet anise. It is really fennel (*Foeniculum vulgare*), cultivated in Europe from very early times—the fennel with which victors were crowned at ancient games; the fennel of Shakespeare and of Longfellow:

> "Above the lowly plant it towers,
> The fennel, with its yellow flowers;
> And in an earlier age than ours
> Was gifted with the wondrous powers
> Lost vision to restore.
>
> It gave new strength and fearless mood,
> And gladiators, fierce and rude,
> Mingled it in their daily food,

And he who battled and subdued,
The wreath of fennel wore.'' [3]

Doubtless its presence in California harks back to Mission days, when the Padres perhaps raised it in their gardens, as its seeds have long had a reputation in domestic medicine as a carminative; but however it first arrived, it is now widely distributed as a weed. It is well known to Spanish-Californians, who call it *anis hinojo*. Father St. John O'Sullivan, of the Mission San Juan Capistrano, tells me that in former days the Spanish people used to put the broken-up leaves in water for sprinkling on the floors of the Mission church to make the place smell sweet. The pleasant flavor of the plant has long made it attractive to California children, who find enjoyment in chewing the buds and young leaves. This use of the herb, according to Mr. J. Burtt Davy, gained for it among the young folk of San Francisco the polite name of ''ladies' chewing tobacco.''

Perhaps it is hardly just to call so dainty a little charmer as sweet alyssum a weed; but it certainly has established itself on many a bit of vacant ground in California, and in the gardens it spreads everywhere in bed and path regardless of whether wanted

[3] "The Goblet of Life."

or not. With it and even more persistent as an intruder in gardens is the scarlet pimpernel whose salmon-red starry blossoms with a dark eye are so pretty that tender-hearted gardeners generally leave a few where they will do least harm. It is a famous Old World plant—this scarlet pimpernel—which, because of its habit of closing its flowers when clouds gather and upon the approach of evening, is called by English country folk by a number of names appropriate to the fact, such as Poor Man's Weather-glass, Shepherd's Warning, Shepherd's Clock, Wink-a-peep, and so on. Then there is a quaint little grass that has drifted uninvited into our gardens and waste places from across the sea, *Lamarkia aurea,* whose one-sided panicles of silvery-gray bloom tinged with pink or yellow, make it an object of pleasurable interest. It is another of the Mediterranean fellowship, and its appearance in Southern California, where it is most abundant, dates from 1875, when, according to Mr. Parish, the botanists Parry and Lemmon discovered it growing in a cañon back of Redlands. It has now won popular favor to a degree that has gained for it a common name—golden-top.

That so confirmed a globe trotter as the Castor-oil plant (*Ricinus communis*), which originating in India has now established itself in every tropical

country in the world, should have become naturalized in the warmer parts of California, is not surprising, and it occurs not infrequently as extensive thickets in the open, seeding itself and attaining the dimensions of a small tree. From its abundance about old Spanish settlements and the vicinity of the Missions, it probably was first planted by the Padres, both for the sake of the oil bearing seeds, whose properties are well known the world over, and for the regal beauty of the plant itself. The large five-fingered leaves are a marked feature to which it owes its popular Old World name—*palma Christi,* the hand of Christ. Such sacred association might well have helped to commend it for inclusion in the Mission gardens. Mexicans call it *higuerilla,* little fig tree, perhaps from some resemblance of leaf. Companioning the Castor-oil plant frequently is another arboreal weed, which is thought by many to have had its start in California as an ornamental shrub in gardens—that is, *Nicotiana glauca.* It often makes considerable thickets too, and I have seen it in congenial surroundings as tall as twenty-five feet, with a trunk three to four inches in diameter at the base.

Its blue-green leaves and tubular yellow flowers, in bloom most of the year, are its recommendations for a place among ornamentals, but the present-day

competition of the pick of the world, has relegated this old favorite to the dump. The dust-like seeds are borne far and wide by the wind, and frequently germinate in the chinks of adobe house walls, where if undisturbed the plants grow to a considerable size and bloom, hanging on, as it were, by their toes. It is popularly known in California as wild or Indian tobacco, and is a real tobacco, cousin to Lady Nicotine. Mr. C. F. Lummis tells me that Indians and Californians used to smoke the leaves in their cigarettes, and the Spanish speaking people of this State and of Mexico call it *Buena moza,* which is Spanish for a fine girl. It is indigenous to Argentine, and has long been naturalized in Mexico as well as in California. Its introduction into California is believed to date from the Mission period. It is a common sight about the old Mission establishments.

IV

TREE HUNTING ON A CALIFORNIA DESERT

IT was on my first trip to California as the train slowly climbed the monotonous stretch of the Mojave Desert towards the Cajon Pass, which cuts the snowy crest of the San Bernardino sierra to let the traveler into the land of the orange and the palm, that looking up from my book I caught sight through the car window of one of the most remarkable forests in the world. It was not a forest of the kind the Easterner knows, with twilight aisles and a floor deep in leafage and underbrush; but open to the sun, the individual trees set well apart from one another in gravelly ground where little else was growing. The trees themselves were as grotesque as the creations of a bad dream; the shaggy trunks and limbs were twisted and seemed writhing as though in pain, and the dagger-pointed leaves were clenched in bristling fists of inhospitality. As far as the eye could reach, the strange forest extended—some of the trees all trunk, barring a bud-like club or two of branch, some a little better grown resem-

bling huge forks with clumsy prongs, others with well grown crowns that were fairly symmetrical.

"So that's the desert's idea of a tree," I remarked for the benefit of my neighbor, a quiet, weather-beaten man, with a close-cropped gray beard. He, too, was watching them with apparent interest.

"That's one of its ideas," he responded smilingly. "You perhaps don't know the desert?"

I confessed my ignorance, and my companion went on:

"They are tree yuccas,[1] or yucca cactus as our desert dwellers sometimes inaccurately term them. The species is peculiar to the Mojave Desert, principally in California but extending eastward to Southern Utah. The unbranched trunks are the saplings. When they are ten or twelve feet high, they begin to branch out, adding a few limbs year by year until they get a pretty good crown, as you see, and reach a height of twenty-five or thirty feet, when they rest on their laurels. The upper leaves on the branch stand upright, but as growth proceeds, they droop over; and when they die they are pressed point downward against the bark. That

[1] *Yucca arborescens*, or *brevifolia*, of the botanists. Fremont reported the existence of the strange tree in 1844, though it was not until 1874 that its flowers were collected by Dr. C. C. Parry, and a complete description made possible.

makes th sort of brown thatch which you notice covering the limbs and part of the trunk, and which is a natural protection against the sand and wind storms that are the terror of desert life. The desert folks when in need of diversion, sometimes touch a match to this thatch after dark for the sake of seeing the fire run through the tree from limb to limb, a striking sight against the murky background of the night."

A hatchet-faced, smooth-shaven man, who looked like a bank president and was an interested listener to the little lecture, inquired if the trees were of any practical use.

"In a limited way, yes," replied our man of knowledge. "The wood is spongy, but full of fiber which makes it tough and pliable, and it has been used in the manufacture of artificial limbs and cylindrical sheathing for young orchard trees to protect them from rabbits; but its special mission would seem to be for surgeons' splints. When soaked in water and bound to a man's arm or leg the wood conforms to the part, and being porous admits circulation of air. Paper makers have long had an idea that it ought to do for paper pulp, and a London publisher once had a shipment of it made to England, but the paper it turned out was not satisfactory. As fuel the wood is useless in the or-

Tree yucca, Mojave Desert

dinary way, but prospectors tell me that after a tree has fallen and lain for years until most of it has crumbled away, there is a residue which is called petrified yucca. It is hard and brittle, of a reddish color, and will take a good polish. That has value as a fuel and burns like coal. But aside from whatever practical use it may be capable of, the tree yucca is one of the most striking features of our desert. It is so different from other trees, so defiant and upstanding in a land of monotonous subserviency to sand and rocks, that I don't wonder it made an impression on the old time Mormons in their desert wanderings, as it did. It would seem to have had a prophetic significance to some of them, for they gave it in Southern Utah the name of Joshua tree, as though they regarded it as the symbol of a divinely appointed leader in the final stage of some pioneering expedition, bringing them, at last into their Land of Promise."

After this dissertation I felt, tenderfoot like, that I knew about all that was to be known of trees on the desert; but a fresh arboreal surprise was in store for me. As I sat a few days later in cheerful comfort before a bright hardwood fire in the Professor's bungalow in Pasadena, it occurred to me to ask him where he got such fine wood—it seemed as hard as coal.

"From the desert," he replied; "it is mesquit."

"So there are other trees on the desert besides yuccas?" I returned.

The Professor laughed softly in an indulgent way.

"There's more on the desert, my boy," said he, "than is dreamt of in tenderfoot philosophy. I tell you what let's do. You are fond of plant life. It is now the middle of March. Let's take the camera and go to the desert on a tree hunt. It is less exciting than gunning for bear, but for the contemplative mind it holds attractions, and is much less dangerous."

And that is how we came to be, a week or so later, on the Colorado Desert—which, by the way, is not in the State of Colorado as the name might imply, but in the southeastern corner of California, just across from Arizona of which it seems naturally a part. Besides the Professor and myself, there was Mr. Carl Eytel, an artist who for many years has painted up and down this desert and in a sense made it his own, for he knows as few white men do its ins and outs, its terrors and its latent loveliness, its Indians and its floating population of prospectors and cowboys and "desert rats." To the inexperienced traveler on the desert, the companionship of one familiar with its trails and watering places is

all but essential, as to be lost may easily mean death. In default of such a guide, it is prudent to keep close to some one of the settlements on or near the railway, such as Palm Springs, Indio, or Mecca, making short trips of not over a day from one of them as a base. Unless the distances are very great, walking is perhaps the best method of locomotion for the plant collector, as he needs to stop continually to observe or gather; but a burro or other pack-animal to carry the canteen, the chuck-box, the camera, and the collections, is something more than a luxury in the desert heat and sand—it is pretty nearly a necessity.

Our starting point was the oasis-village of Palm Springs, six miles from the station of the same name on the Southern Pacific Railway; and we were afoot in the first delicious freshness of the desert morning. Our traps were packed on Eytel's horse, who has since made his début in literature as "the philosophical Billy," of Mr. J. Smeaton Chase's delightful book, "California Coast Trails." We struck eastward, leaving to our left the old historic stage road that plows away through the sand to the Imperial Valley and Yuma, and followed trails through the creosote and sage along the base of the San Jacinto Mountains, whose mighty wall rose at our right to an elevation of two miles above the

desert floor. Up there the snow was packed many feet deep among the pines and firs, the fountain head of sparkling streams that came bounding down the precipitous cañons which here and there split the mountain's side. Clear of the mountains, valiantly these waters charge the desert sands forcing fast narrowing channels through bowlder-strewn washes; but the odds are too great, and they are soon engulfed in the waste of aridity. Though lost to sight, however, their hidden influence is long felt and serves to give rise along and in these washes to a rather abundant floral life, some of it arboreal, and in such a place we found our first desert willows.

"Not willows at all," the Professor complained, for he has a distaste for inaccuracy, "but really cousins of the catalpa that you all know back East. *Chilopsis saligna,* or *linearis* I believe they call it now."

They were, nevertheless, not a bad imitation of willows fifteen or twenty feet high, with their crooked trunks in approved willow fashion leaning over the wash where then only the memory of water was, and their slender branches clothed with narrow, willowy leaves. The opening flower clusters, however, told a story that no willows ever uttered—white trumpets of loveliness, suffused with purple,

and in their throats patches of yellow, blowing to the desert air a faint fragrance as of violets. Amid the foliage hung still a few seed pods of the year before, in shape like elongated string beans, but dry and brown now and splitting to release queer, little, silken-fringed seeds.

A dry tangle of litter and drifted brush, ridges of sand and a huddle of rocks gave a look of slovenliness to the locality in which the desert willows stood, and the trees themselves grew bunchily and untidily; but a short distance away were a half-dozen trees that for neatness and smartness of appearance I had never seen surpassed in a city park. They stood, some twenty feet in height, in clean, level ground swept clear by the wind, and were remarkable for a general airiness of aspect for which I could not at first account. I walked over to one but it was some moments before I realized that the entire bark of the tree—trunk, branches and twigs—was light green. Moreover, the leaves were quite small, pale and sparse, so that the limb-skeleton showed plainly through the foliage; and to crown all, a wealth of bright yellow flowers, each about the size of a buttercup, filled the tree with a mild radiance that seemed of a world more spiritual than this. The effect of the green and gold against a cloudless, turquoise sky, thrilled me as a strain

of wild music. Eytel had his paint box out and was making color notes.

"Isn't that alone worth the price of admission?" observed the Professor complacently.

"What is it?" I asked, and my awestruck tone must have sounded as if I thought myself in a sanctuary.

The Professor's preciseness of reply was jarring.

"*Parkinsonia Torreyana* is the old-fashioned name, but the modern iconoclasts who are unhappy if not smashing the old botanical nomenclature, insist on calling it *Cercidium Torreyanum*. Everybody on the desert calls it palo verde. That's Spanish for green tree, and a good honest name, for it is green, bark and all. Isn't it a glorious posy? You would find it if you traveled east all along the way into Arizona; and down through the Sonoran Desert of old Mexico and in the arid peninsula of Lower California it follows you like the providence of God."

Here a temporary diversion in our jornada was occasioned by the necessity of a search for our philosophical pack horse, which had taken advantage of our preoccupation to vanish from sight. He was trailed, however, by his broken tie-rope and eventually captured, poetically browsing on a flowery patch of pink sand verbena, his pack slipped beneath

his belly. This adjusted, we resumed our march of discovery.

For some time my eyes had been caught by what seemed to be a cloudlet of smoke hanging still and low over the desert ahead of us and now three or four more came into view, a couple of hundred yards away.

"Campers ahead?" I thought. To my astonishment, as we drew nearer, the supposititious smoke resolved itself into an airy tangle of grayish twigs and branches, and my cloudlet stood revealed as a small tree with all the tender atmosphere of a painting by Corot. The delicate limbs were clothed in a minute white down to the very tips of the twigs, and though all the rest of the desert shrubbery that day of late March, was in the fulness of its foliage, this little tree was leafless. Spines as sharp as needles were set singly but abundantly upon the branches. Was it dead? I asked. But the Professor assured me it was very much alive.

"It is *Dalea spinosa,*" he said, "or smoke tree, a popular name whose accuracy you can now endorse. Indigo bush is another name I have heard for it, but you have to be here in mid-June to understand why. Then these apparently lifeless branches wake up and the whole tree bursts into glorious bloom—an almost solid mass of small pea-blossoms of the rich-

est indigo blue. You never doubt miracles after once seeing that—such gorgeousness of flowering on dry sticks rooted in sand."

"I'd call that blue an ultramarine," said Eytel who had the artist's sensitiveness to color.

Of all the desert trees, however, by far the most important, and the one we saw most of, is the mesquit (*Prosopis juliflora*) which in one form or another is found from Utah to Texas and from the southern California deserts to Mexico. It is in an especial sense the desert's own tree, and rooted sometimes as much as sixty feet below ground, it defies drought and wind as no other tree can. As the storms pile the sand around its short, twisting trunks and wide-spread, thorny branches, it heaves itself continually like the indomitable fighter that it is above the smother of grit and gravel, until in the case of old individuals there is vastly more tree underground than above. These sand hummocks, mesquit-crowned—*montes* as they are sometimes called—are among the characteristic features of the Colorado desert. The tree is deciduous, and when it wakens from its winter of inactivity, the new born, feathery foliage spreads a sheet of tender flavescent green on desert plains and in cañon mouths, and the wild bee knows his harvest is at hand. Following the first leaves, myriads of cat-

Smoke tree (*Dalea Spinosa*). It is practically leafless; the tangle of gray twigs gives an appearance of clouds of smoke, at a distance. Colorado Desert of California

kins of yellow bloom swing themselves, in golden tassels, from twigs of the previous year, all abuzz with hordes of nectar foragers. In July the trees are hanging heavy with the slender beans which follow the flowers, and dropping in their yellow age, make rich feed for cattle and horses.

The mesquit, indeed, was to the aborigines of the California desert something of what the date palm has always been to the Arab—a kind of mother-tree yielding of her beneficence a living to the children of the desert—the answer of God to their prayer for daily bread. The beans, five or six inches long and growing in large bunches, are full of nutrition, and were until recently a mainstay of aboriginal desert diet. Before the Indians got to buying indifferent wheat flour of the white traders, they used for ages to harvest these sweet, ripened beans that were the free largesse of the Lord, store them in their basket granaries, and grind them as needed into a meal of high nutrition, about quarter sugar. Even today, some of the older people like to gather the ripe legumes, remove the seeds, and mash pulp and pod into a dulce, which they mold into thick round cakes like cheeses, and esteem as they do mescal. Furthermore, the mesquit wood, being hard as oak, supplied a capital fuel and the most substantial of timbers for the frame work of wickiups and corrals.

From the sap a permanent black dye was made; from the twigs coarse baskets were woven; and a certain gum that exudes from the wounded trunk or limbs in summer was pleasant to eat, besides being useful in numerous ways as mucilage. As medicine, dissolved in water, the gum was soothing to sore throats, as gum arabic is. It is in keeping with the best traditions of American wastefulness that we are turning this wonderful tree into firewood, every year hundreds of carloads of it going up in smoke in our fireplaces, while we sit and grumble about the high cost of living.

As we discussed an eleven o'clock luncheon in the shade of one of these mesquits, the Professor broke off a twig, and launched upon another lecturette.

"There is an idea current among desert folk that the shade of a mesquit is the coolest shade in the world. Perhaps there is something in it. You see the leaflets are hung in such a way as to admit of their turning with the least air, and that means that shade is combined with a maximum of circulation. I wish we had time to-day to explore that cañon yonder, where we should find another species of mesquit, which they call the screw-bean, because its pods are perfect imitations of a screw. Once there was a kindly old Spanish Franciscan friar named Padre Garcés, who did a deal of traveling

about these deserts, converting Indians while our ancestors back East were fighting in the Revolutionary War. He left some diaries, which are among the beginnings of California literature. I was reading in them not long ago, and the entry of one March day in 1776 records his encountering in an arroyo of the desert to the north of where we are, some trees 'that grow the screw'—*que crian el tornillo.* I found that interesting because to this day the Mexicans call the screw-pod mesquit, *tornillo* or *tornilla.*"

Though it was now high noon and the desert was a blaze of sunshine, the heat was tempered by a pleasant breeze. We decided, therefore, to forego a siesta and start on at once, changing our course with a view to reach a little oasis of salt grass, arrow-weed and Washingtonia or California fan-palms, a favorite haunt of Eytel's, ten miles straight north across the desert. There he was desirous of painting, and I at the same time would have a chance to see in their native wild some groves of these beautiful palms which are now thoroughly domesticated up and down California, as well as in Southern Europe. Before setting forth, however, we took a novel drink from a barrel cactus—one of a queer columnar sort of which there were several about our stopping place, ranging in size from

dumpy babies a few inches high to fine old patriarchs close to five feet. They were bisnagas—*Echinocactus cylindraceus*—the famous vegetable water barrels of the desert. It was the season of their blooming and a circlet of greenish yellow flowers rested upon the head of each like a chaplet. Selecting one about half the height of himself, Eytel sliced the top off horizontally with an ax, disclosing a solid heart of white, hard, moist pulp, resembling unripe water melon. By chopping into this with the ax, pummeling the fragments with the butt of the helve, to release the watery content, and tossing out the pulp as it was pressed, there was formed in a few minutes a basin containing a pint or so of a cloudy looking fluid. We dipped into it with our cups, and found it cool and refreshing, slightly acid and quite devoid of the acridity which spoils the liquid squeezed from other cactuses.

Like many a rough character among men, the bisnaga hides beneath a bristling exterior a kindly heart, which long ago the Indians discovered. From them the early white travelers on the desert learned the secret of the hidden reservoirs, which have saved many a man from perishing of thirst, while many another, ignorant of the nature of these remarkable wells in the desert, has doubtless died in agony within sight of them. The desert tribes went

further than merely drinking from them—they made stew kettles of them. Scooping out most of the juicy interior, they would pour back a needful amount of water, heating it with hot rocks in the ancient aboriginal fashion, and adding the food to be cooked. Such primitive boilers were often found in old times about Indian camps where bisnagas grew. The value of the various species of cactus to the animal life of the desert is considerable. In the recesses of some of the branching sorts, birds build nests and rear their young in security from marauding snakes which are baffled by the encircling thorns; small burrowing mammals of one sort and another have learned to fortify the entrance to their subterranean homes with spiny opuntia joints, effective discouragers to Brother Coyote's advances; and it is said that wild horses on the desert, when forage and water run low, will sometimes kick the fleshy sorts to pieces to get at the melon-like interior which is meat and drink to them.

Most people take it for granted that a tropical jungle is the place to go in order to see flowers in abundance and in the fullest richness of color, while the desert is not associated in their thoughts with the presence of flowers at all. As a matter of fact bright flowers come with bright sunshine, and deserts and mountain tops above the timber, are the

floral meccas of the knowing ones. The high humidity of the tropics and the relatively small percentage of sunshine due to the prevalence of low-hanging clouds that every now and then precipitate themselves in torrential rains, make for rank growth of foliage rather than for any showy display of flowers. Tropical vegetation runs markedly to leaf and branch, and the blossoms, while often of individual beauty and wonder, are more or less lost in a riot of enveloping green. In the almost continuous sunshine of our southwestern deserts, on the contrary, where the average annual rainfall is but four or five inches, the florescence is abundant and often of great brilliancy on plants with relatively inconspicuous foliage, or even none. To be sure, the extreme aridity causes the season of flowers to be very short—a few weeks of activity in the spring and then our desert plant life relapses into quiet dormancy until another spring comes round; but, as the Professor cheerfully puts it, "Though it is a short life, it is a merry one."

So, as our course carried us straight out into the sun baked desert, it soon became evident that here, far from haunts of men, God had planted a wonderful wild garden. Man, in his arrogant way, assumes that the prophet's vision of the desert's rejoicing

and blooming as the rose had to do with artesian wells and alfalfa. Perhaps it had; but that day, as we footed it through acres of trailing pink abronias and across violet sheets of dainty gilias, and brushed past a score of different shrubs—daleas, kramerias, encelias—begemmed with exquisite blossoms in blue and crimson and yellow, I realized that there was another blooming of the desert, besides that of man's nurturing, and quite as worthy of regard. The conventional talk that I had heard about the desert flora was of its thorns and ill smells and forbiddingness; but here was pure beauty.

Not always are the desert flowers, like the abronias and gilias, massed in colonies; oftener are they distributed at more or less wide intervals, for in that land of scanty moisture, crowding would mean death; and it is only after the eye becomes accustomed to the sparsely clothed waste of sand and rock, that one begins to catch here and there the glint and glow of color that marks the presence of flowers. The gorgeous petal-masses of the cactus tribe, in pink and yellow and magenta of half a dozen shades, will sooner or later catch half an eye, as will the brilliant spurts of scarlet that spring like flame from the upper part of the whip-like, almost leafless stalks of the ocotillo or candlewood (*Fou-*

quiera splendens).[2] Others, however, reveal themselves less readily. Sometimes these lie like gems flat upon the earth, to be seen only by men who are given to lowly looking. Among such, none is more appealing, I think, than the exquisite desert star (*Eremiastrum bellioides*), resembling a tiny English daisy white-rayed around a golden center, and blooming in little circles on the open sands. My allegiance, however, sometimes wavers in the presence of another dainty groundling with disks of quiet yellow snugly set in the midst of trim little gray leaves, thick like bits of woolen cloth. Indeed it is not hard to think them cut out of that material. Dr. Gray, doubtless, served science well enough when he gave this plant the name *Psathyrotes annua,* but it deserves a more musical one. In the same modest fellowship are purple-flowered namas, and coldenias with quaint little fans of leaves, deep furrowed and olive green; yellow suncups with queer twisting seed-vessels hiding in the foliage like tiny coiling green snakes; and there are biscutellas

[2] This remarkable thorn, because of the readiness with which cuttings root, is often planted for hedges and corral fences. The stem is rich in resin and a peculiar inflammable wax. Mexicans cut it into splints, which may be lighted like candles, and burn with a pleasant fragrance. These splints are called *ocotillas*, or little *ocotes* —*ocote* being the Mexicans' name for a certain pine tree whose wood is much used to split into torch material in Mexico as pine-knots a century ago were used by our forefathers.

One of the most vicious cacti of the desert (*Opuntia Bigelovii*)

less noticeable for flowers than for their flat, round pods with accentuated rims, growing in pairs, suggesting goggles; and there are lilliputian eschscholtzias (*E. minutiflora*), in general appearance quite like their robust cousins of the coast but in size divided by ten. Of more aspiring proportions and more striking aspect are phacelias in pink and blue; the fiery trumpets of the beloperone blooming on leafless stalks; palafoxias in bundles of dull purple, and golden ox-eyed encelias. Lemon-yellow mentzelias rising from wan, white stalks and jagged leafage, bear distant company with baileyas, pale and ghostly, the latter gowned in long, cottony white hairs, and the flowers a washed-out yellow with limp rays.

As we plodded along, pebbles in our mouths to keep down the thirst and Billy nipping sidewise at occasional bunches of galleta grass, the ruddy-stemmed chaenactis in white and in yellow nodded saucily at our little caravan and sunny faces of malacothrix looked shyly up to ours, while bush-daleas, their spiny limbs covered right royally with pea-blossoms of intensest blue, plucked us now and again by the sleeve. With the waning afternoon, there opened here and there at our feet, in pallid loveliness, the blossoms of an evening primrose (*Oenothera trichocalyx*) two inches across, pure

white with a glow of yellow at the heart, and faintly fragrant. Side by side with them amid the gray leafage of the plant, were the spent flowers of yesterday, drooping dejected upon their stalks, companioning the alert buds flushed with pink, of tomorrow's blooming—an epitome of life, affording, like life anywhere, texts for pessimist and optimist according to the point of view.

So with the lengthening shadows, we came at last to Seven Palms, and Eytel, slipping the pack from our Rosinante, staked him in the midst of a patch of salt grass, while the Professor and I started a fire for the brewing of a cannikin of tea, hard by an ancient palm. While in point of varied usefulness the California fan-palm must yield to the mesquit, it is *sui generis* for stately beauty in the desert sylva—one of the noblest of our native trees. To one accustomed to seeing it only in straight rows along city avenues and private roadways, the trunks trimly shorn of all leafage well up to the growing crown, the first sight of it in Nature's setting is refreshing—in unstudied groups of few or several, or in sinuous procession following the winding course of some rivulet, into whose moist margin, crummy with alkali, the trees love to sink their toes. Around their huge bases are gathered sedges and rushes, arrow-weed and salt-grass; now and then

mesquits and alders bear them company; and in such tangles, too—a rare surprise—I have found the lovely orchid, *Epipactis gigantea,* thrusting up to the light its plaited leaves from which spring flowery racemes in green and purple. The ground immediately beneath the palm is usually slippery with a litter of fallen flower stalks shed after the fruit has ripened and dropped. The old leaves, when brown, drop backward and hang head downward against the trunk, forming upon old trees—except when fire has been at work—a dense thatch, protecting the bole from the onslaught of wind and weather. After a long jornada through sun and sand, such as we had made to Seven Palms, it is rare enjoyment to lie on one's back beneath these glorious trees and look up, up, up their eighty or a hundred-foot trunks into the depths of the glistening crowns, through which the desert winds go blowing with the music of rushing water. The sunlight is caught and flashed from a hundred insect wings; birds come and go intent on various ornithological errands, singing as they fly; and far away, twenty miles perhaps, one sees as though afloat in the upper air the snow fields lying cool on San Gorgonio's crest.

In its wild estate, this palm is found only on the western borders of the Colorado Desert, usually in companies in or near the mouths of certain foot-

hill cañons, which debouch at intervals upon the plain from Palm Springs to the lower end of the Salton Sink. Occasionally, as at Seven Palms, a grove is found venturing a few miles out in the desert, where some alkaline ciénaga provides the needful moisture. Mr. S. B. Parish [3] is of opinion that the distribution of the California species of *Washingtonia* has been determined by the boundaries of the great lake which at no very distant time, geologically speaking, occupied the central depression of the Colorado Desert; and that we may reasonably suppose the shore of the ancient lagoon to have been graced with groves of these stately palms. It is a pleasant picture, and it may refresh the weary tourist to-day to conjure it up, as his train carries him across the heated sands over which primeval waters once rippled.

[3] "A Contribution toward a Knowledge of the Genus *Washingtonia*." *Botanical Gazette*, December, 1907. In this paper Mr. Parish has straightened out the confused terminology of the genus, and ascribes to the California tree the name *Washingtonia filifera robusta*.

V

SPRING ON THE MESA

WHEN does spring come in California? It is not to be answered in a word. California, like Mexico, includes several zones on end. From the alpine heights of Whitney or Shasta, two and three-quarter miles up in the air, where snow lies all the year, to certain semi-tropic nooks in the Coast country where with watchfulness the papaya and the avocado will ripen in the open, includes pretty much the whole range of climate from the Frigid Zone to the Torrid. Obviously spring cannot come to all on the same day in the calendar. But even in the relatively equable valleys and mesa lands of the central and southern parts of the State where snow never falls, there are two ways of looking at the matter. In one sense, the California spring may be said to begin with the ending of the dry season and the coming of the rains in October or November; to suffer a temporary check with the lower temperatures of what the rest of the United States calls winter-time; and with the strengthen-

ing suns of late January, to start on again to its crowning in April. That, however, is too revolutionary a way of putting it for most people, whose conventions require a bit of winter in their year, and for them spring waits for the pushing up of the daffodil leaves through the garden's tender mold. This cheerful happening may be as early as mid-January, or rarely as late as March; usually it occurs in early February. The principal determining factor is the rainfall. If this sets in liberally about November, as it may be counted upon to do in seven seasons out of ten, and is repeated at intervals of two or three weeks during December and January, the wild flower hunter will be warranted on any February morning, in taking his vasculum and a bite of luncheon, and making for the foothills.

The First Wild Flowers

California geography is replete with Spanish terms descriptive of various features of the landscape. One of these is *mesa*, which means literally a table, and is applied to the sloping or at times level benches of land that extend outward from the bases of the hills, and finally break off more or less abruptly into the valleys. On such mesas lying to the sun, and in the traversing washes and cañons

Seven California wild flowers reproduced from water color drawings by Elisabeth H. Saunders

bearing from the mountains the singing waters of many brooks to irrigate the plain, I like to go for my first wild flowers. I have never yet been able to make up my mind as to which of all the lovely multitude is really first. Perhaps the truth is, there is no first. Doubtless it is with flowers as with men, the laurel of the champion is sooner or later snatched away by some succeeding competitor, who in his turn loses to another. So one year it may be the California peony, whose black-crimson globes filled with golden anthers, I have found nodding on their leafy stalks in January; another year, the white dentaria, California cousin of the pepper root of Eastern woods and exquisite as the garden snowdrop whose modest grace it simulates, may lead the procession; or again it may be the fuchsia-flowered gooseberry whose bending branches virgin-leaved and fringed with a hundred scarlet pendants of bloom, have swept my face in many a trail, when the year has been but a few weeks old. A rosy little portulaca (*Calandrinia Menziesii*), is another very early comer that twinkles brightly in the midst of wild grasses, and sometimes assembles a mass meeting of its own kind so successfully as to make a blush upon the mesa's cheek, visible from quite a distance.

Among the first arrivals, too, I count upon find-

ing that favorite of California childhood, the dodocatheon, though no child is pedantic enough to call it so, preferring more sensible names, such as shooting star, wild cyclamen, mosquito bill or mad violet—this last, perhaps because the petals are strongly bent backward, like the ears of an animal that is vexed. There are at least two species in California, if not more. As I find the plant on my southern hunting grounds the petals are lilac flushed with pink narrowing to a ring of yellow about the plum purple column of stamens and pistil; while in Central and Northern California the flowers are much larger and distinctly magenta. Mr. V. K. Chesnut, in a valuable monograph entitled "Plants Used by the Indians of Mendocino County, California," states that the roots and leaves of this pretty wilding used to be roasted in the ashes and eaten by the Indians, and that the squaws adorned themselves with the blossoms at dances. It is a friendly little plant, and one may meet it throughout the length and breadth and height of the State dotting sunny swards from the sea's edge to the glacial meadows of the High Sierra. Forms of it too, are found as far up the coast as Bering Strait, and eastward and southward across the continent to the Atlantic; and even beyond that, for it has been carried to a home in European gardens.

Herrick, than whom none of the poets had a prettier fancy in flowers, calls violets "maids of honor to the spring," and you may be sure Flora did not forget California in her apportionment of these vernal handmaidens. Species white and species blue, species yellow and species of all these colors and a dash of brown thrown in—all these are to be gathered in one situation or another, but yellow is the color that predominates; and blue violets, so common in Eastern woods and fields are but infrequently seen in California. To a far greater extent, too, than in the East, the petals of the various species are of varied hues, pansy-like. Of this character is the commonest species of the south, the yellow *Viola pedunculata* or wild pansy, whose two upper petals are conspicuously painted a warm brown on the back. It comes with the shooting stars in February, an incarnation of jaunty brightness, and Lowell, had he seen it, might have found it as worthy the golden riot of his fancy as that yellow flower he did immortalize—the buccaneering dandelion of our lawns.

In the same choice company will be found the first brodiaeas of the year—little compact heads of lilac topping slender stems, with a grass-like leaf or two. They are among the best known and best beloved of wilding blooms in California; and the spe-

cies known to botanists as *Brodiæa capitata,* common throughout the State, forms an important part of the stock of itinerant wild flower venders at tourist resorts. Country children have a way of calling it wild onion, which is more accurate than some common names, for its bulbous root is edible and the plant is really related to the garden onion. A more poetic appellation, which may be preferred by people who stumble at the rather difficult word brodiæa (given, by the way, in memory of one James L. Brodie a Scotch botanist of long ago), is the term by which the species is known in cultivation—California hyacinth. Brodiæas are indigenous only to our Pacific Coast and are of many rather diverse kinds. The flowers of one species (*Brodiæa coccinea*), native to Northern California, are crimson. In size and shape they resemble Chinese fire-crackers, which they further suggest by the limp way the clustered blooms droop from the top of the stem. This fire-cracker flower, as it is popularly called, is one of the most curious in the wild flora of California, and has been the means of enlivening the dry annals of science with a bit of sentiment, which Thomas Meehan has preserved in "The Native Flowers and Ferns of the United States." It seems the first botanist to notice the plant was Alphonso Wood, to whom it was pointed out in 1867

by a stage driver in the Trinity Mountains. The flowers had long interested this unbotanical mountaineer, and he had gratified the sentiment of his heart by naming it Ida May, after his little daughter, with whom it was a favorite. Wood realized that the plant was new to science, and believing it also a new genus, described it under the name *Brevoortia Ida-maia,* the specific terminology commemorating not only the parental affection of the stage driver but also the fact that the plant had been collected on the "ides (15th) of May!" Unfortunately, Wood's naming was overruled by his confrères in science, who subsequently transferred the flower to the genus Brodiæa, and while about it, cleared the record of all touch of sentiment by substituting for *Ida-maia* the prosy *coccinea.*

In a dry wash of my southern mesa I am like to find early in February, the first starry blooms of the little fringed gilia (*G. dianthoides*), bespangling the gravelly ground. The dainty satiny corollas with their yellow eyes are of so rare a loveliness that it would be a hard heart indeed that could resist the appeal of their quiet beauty. This blossom has always seemed to me to play on the Pacific Coast the part in Flora's spring pageant, which on the Atlantic side of the continent, is taken by that modest Houstonia which is called innocence by some and

Quaker lady by others. The fringed gilia is the forerunner of a whole procession of gilias which are to be found throughout California, fifty species or so,[1] not one of which is indigenous to the Atlantic seaboard. There their nearest relatives are the phloxes and polemoniums. In pink and lilac, white and blue, purple and golden yellow, the gilias are a glorious fellowship, arraying desert and plain and mountain side in acres of solid color—a free gift of cheerful beauty. One species (*Gilia Californica*) is universally known in Southern California, where it is common, as prickly phlox, and its bristly stems of fresh green are conspicuous in early spring amid other greenery of the mesa, but the rosy phlox-like blossoms are not seen until towards the end of the rainy season. The ferny foliage of the phacelias, or wild heliotropes, adds to the verdure of the same slopes in early spring, but their blue flowers, set in coils like the heliotrope's, are rarely seen before March. This plant offers one of the instances of a common name due to a superficial resemblance which fooled even the botanists at one time; for although the genus *Phacelia* is not even in the same family with the heliotropes, the learned

[1] Some botanists are disposed to break the genus Gilia into a number—*Linanthus*, *Navarretia*, *Leptosiphon*, etc., but the distinctions are not such as all the doctors can agree about. The word *Gilia* is commemorative of a Spanish botanist named Gil.

scientist who undertook to describe the first collected specimen, took it unquestionably for a *Heliotropium,* and so named it.

In these early days of Spring's progress she drops as she goes, a cloth of gold woven here of suncups and there of *Baeria,* each with flowers the size of a dime, that always nestle close to earth, but by reason of their abundance make a brave showing in spite of their individual tininess. The former is a diurnal species of *Oenothera,* a genus to which the evening primroses belong; *Baeria* is a pretty, orange-yellow composite of so delicate a perfume that Titania, if ever she visits these Hesperian shores, must have her fairies bottle it for her handkerchiefs, I think. It is one of the most alluring of all the California floral sisterhood, and flows and trickles like a golden stream sometimes for miles, gathering now and again into pools and lakes of sunny color, on foothill slopes and in the valleys, from Oregon to Lower California. And now, too, we shall have our first glimpses of the lilac cups of the mariposa tulips, resting like butterflies upon some rippling lake of wild grasses across which the breeze sweeps. So grasslike are the mariposa's leaves, that they are all but indistinguishable in such situations and it is easy to imagine the beautiful blossoms borne by the grasses themselves.

These flowers are among the most famous of California wildings, both at home and abroad where they have long been grown in gardens. There are some forty species of them indigenous to the United States, nearly all of which are confined to the Pacific Coast. The flowers of all are remarkable for their beauty, and are of a great range of color, white, yellow, lilac and half a dozen shades of purple, often strikingly marked with lines and dots and eye-like spots in a manner suggesting the gay wings of a butterfly. It was the latter peculiarity which won the flower the name of mariposa, meaning butterfly, by which the Spanish-Californians call it. In botanical parlance the genus is *Calochortus*. The most usual popular name would seem to be mariposa lily, which is proper enough, as the plant is of the Lily family; but its nearest relation in that large tribe is really not the lily but the tulip, to which the resemblance of the flowers in most species is apparent even superficially.

In plant nomenclature the Spanish-speaking Californians are quite as happy as in the geographical namings, as is instanced in the case of another abundant spring-bloomer on our foothill slopes—*Orthocarpus purpurascens*. Whole acres are sometimes given a noticeable magenta tinge by the crowded brush like heads of the plant, which owes

Sierra snow plant (*Sarcodes sanguinea*)

Wild lilac (*Ceanothus thyrsiflorus*)

its color not only to the flowers but to the rosy-tipped bracts that enclose them. Because of the bunching of the blossoms in long bushy spikes, not unlike small whisks, the Spanish inhabitants have given them the name of *escobitas,* or little brooms. To Americans they are more often known as owl's clover—a much less obvious name, which I am quite at a loss to account for. Possibly to the vision of the burrowing owls which frequent its haunts, the showy heads of bloom may pass for red-clover tops, but as a matter of fact, the plant is not at all akin to the clover. It is a near cousin to the castilleias, or Indian paint-brushes, whose spikes of scarlet-bracted flowers flame vividly in the ciénagas and thickets, and on the sun-scorched slopes of the later year.

One spring noon on the mesa, as the Professor and I discussed a brace of sandwiches by a tinkling rill, fringed with watercresses, he relieved himself of a jeremiad.

"A humiliating fact in connection with our California wild flowers," he remarked, struggling with a bit of gristle in the meat, "is the average Californian's own indifference to them. Not only does he not know their names, he does not even see them, as he slashes right and left in his haste to subdivide the State into building lots and orange ranches.

Why, man, the gardens of Europe are full of California wild flowers, and have been for three generations—raised from seeds carried there by English collectors—such flowers as clarkias, collinsias, lupines, gilias, eschscholtzias, godetias, phacelias, mariposa tulips, penstemons, and a score more. Now here—"

He plucked from the grass a little cup of blue as tender as the hue of the sky above us, and continued:

"Now this baby-blue-eyes, as we call it—nemophila—only the other day I was looking over an English garden book and found a note of this little beauty which is as well known there as pansies are with us, and the writer, a practical gardener, not a sentimentalist, spoke of it as the most precious of annuals. That's in England, mind you, whose gardens hold the pick of the whole world; and yet year by year our real estate men are running gutters and laying down concrete walks on the graves of myriads of these and sister creations of the most exquisite loveliness. Of course I know that this is largely the fate of native growths everywhere before the advance of what we are pleased to call civilization; and I'll be frank enough to say I'm not altogether for locusts and wild honey—I like my cakes and ale too; but what I do say is that much

might perfectly well be conserved that is now being ruthlessly despoiled, if the despoilers' eyes could only be opened to the beauty in their path."

As we took the homeward trail, later in the day, the Professor started up again on gardening.

"Do you know," he remarked, "that before California was discovered as a floral paradise, gardens were almost deficient in one of their present-day strong points—that is, the annuals? The garden of a century ago was strong in perennial plants, but it pretty much stopped at that. The value of annuals in horticultural effect was first realized when the Royal Horticultural Society of London sowed the seeds of the scores of beautiful annuals which their collector, David Douglas, back in the 1830's, brought them from California.[2] Of course I don't mean that all garden annuals now are California species, though many of them are, but those collections of Douglas's revolutionized garden arrangement, and had the effect of drawing attention to a whole world of beauty, until then practically neglected in gardens. Douglas was followed in California by other collectors for European plant dealers, and now if you pay a visit to foreign gar-

[2] Any reader inclined to doubt the Professor's statements, is referred to Thomas Meehan's "The Native Flowers and Ferns of the United States," Series II, Volume II, p. 101.

dens you will find many and many a flower to remind you of your beloved mesas and cañons. And I am in hopes that even Californians will, before it is too late, wake up to this wild-floral treasure of their land. For really, Californians are flower lovers to a fine degree; they all like their bit of garden, and take a pride in keeping it going winter and summer. The trouble is they pack it full of geraniums and roses and other back-East flowers, without realizing the wealth of pretty things on the hills about them, asking to be invited in. However, some of the flower dealers in California are waking up to this fact, and maybe the day is dawning when every California garden will have at least a California corner."

The California Poppy and Its Cousins

There is one California wild flower that every Californian, however unobserving, knows and loves, as the Briton his daisy or the Irishman his shamrock, and that is the native poppy or eschscholtzia. Poets apostrophize it; artists paint it and craftsmen work it into their handiwork; it is sown in gardens and tradesmen employ it as a mark for their brands of merchandise. Every spring millions of its blossoms are brought indoors and set in vases and bowls, where it illumines the rooms

of half of California with the glow of its imprisoned sunshine. To a degree that can be said of no other State device, it is the floral emblem of the Commonwealth—not a token voted by a little knot of flower enthusiasts, but the spontaneous choice of a whole people, who love it and admit it into their daily life. The eschscholtzia blooms intermittently throughout the year, if the conditions suit it, but it is during the months of spring that this queen of California flowers holds her especial court. Acres upon acres, at that season, by the sea's edge, in the inland valleys, and far up on unforested mountain sides, it spreads solid sheets of vivid orange and yellow, visible for miles—color so intense as to be actually painful to some eyes, and men, women and children flock to the fields poppy-hunting with almost the unanimity of the Japanese at their cherry festival. Yet it is not nowadays to be found just anywhere; one may travel an entire spring day and see never a poppy; in a sense, it is an elusive flower and the fact of a colony of it being in a certain place this year is no guarantee that we shall find it there next spring. At the base of the San Gabriel Sierra north of Pasadena is an elevated mesa tilted to the south, thrusting its tongue into a cañon's mouth. It was known in Spanish days by the name of *La Mesa de las Flores* (the

Table of the Flowers), because of the exuberant growth of poppies which covered it like a golden table cloth, its folds dropping down into the valley. Thence to the ocean is twenty-five miles in a bee-line, and the story goes that that flowery flame could be seen plainly in clear weather from vessels at sea beating their way along the coast, and the captains would set their course by it. I have never been able to satisfy myself as to the truth of this picturesque tradition—there is no such great show of poppies there now; but perhaps no one who has once blinked his eyes in the glowing poppy fields of a California spring will be rash enough to deny the possibility of its correctness. It must moreover be remembered that the ancient demesne of the wild flowers was of far greater extent than the land which is theirs to-day. Year by year more and more of these Hesperian gardens of the wild are being broken up by the encroaching settlements of men; and only the other day I saw a plowman, knee deep in eschscholtzias, driving his furrows straight through five acres of them and quenching their sheeted fire with the upturned earth.

In view of the influence of this flower upon the landscape it seems remarkable that the first to notice it with attention seems to have been Menzies at Monterey in 1792. He thought it a new genus

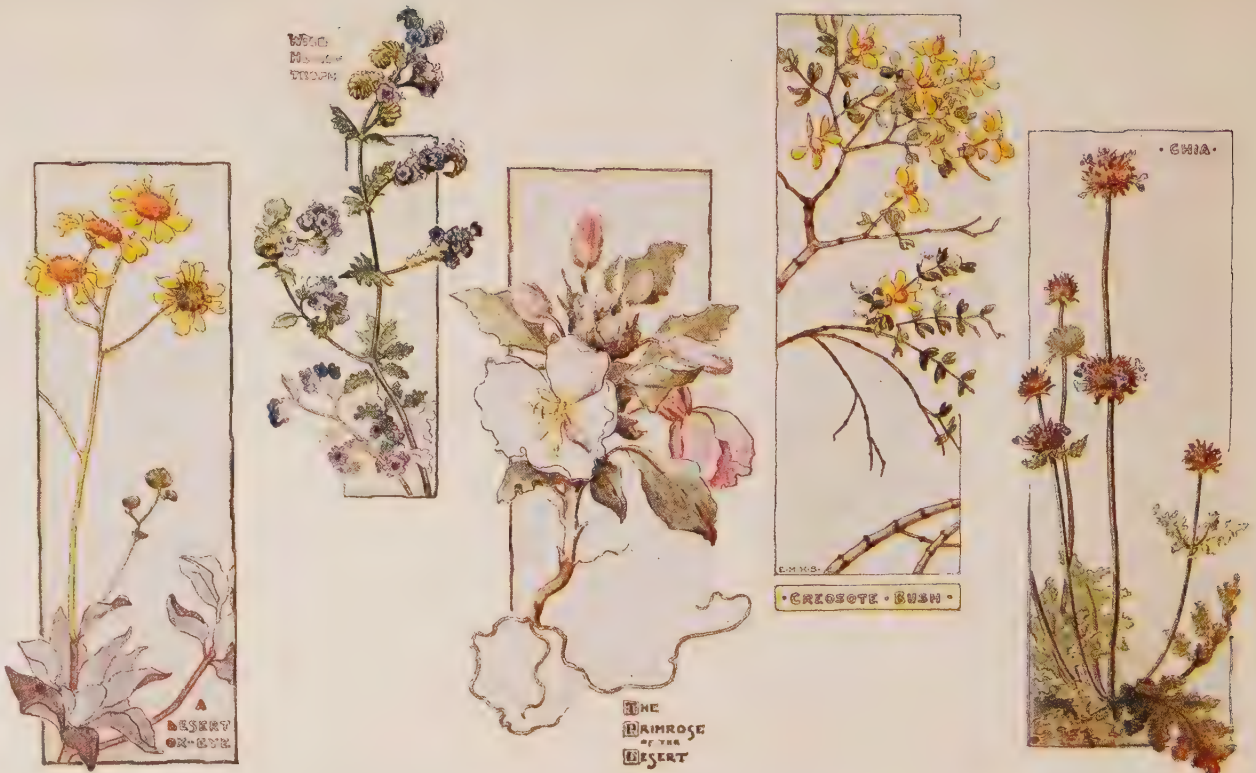
allied to celandine, and seeds of his collecting were planted at Kew, but without much success and the species was lost unnamed. Then, one October day of 1816, came the ship *Rurik* into San Francisco Bay, bringing a Russian scientific expedition, Otto von Kotzebue, in command. The naturalist of the party was Adalbert von Chamisso, a French noble by birth, a Prussian soldier by education, a botanist by choice and a poet by inspiration. A few years before, during the Napoleonic wars, he had written a romantic version of an old German legend concerning a man who sold his shadow, "Peter Schlemihl's Wonderful History," which the world has not yet forgotten; but in 1816, this remarkable genius was more interested in botanizing than in any other pursuit, and during the *Rurik's* stay of about a month, von Chamisso in company with the other naturalist of the expedition, Doctor Johann Friedrich Eschscholz, diligently searched the country around for such specimens of plant life as the season afforded. "The year was already old," he writes in his Journal, "and the country which as Langsdorff [3] had

[3] Georg Heinrich von Langsdorff, with a previous Russian expedition, Count Rezanoff's. He spent six weeks in April and May of 1806, in the vicinity of San Francisco Bay, making collections, but his actual contributions to botanical knowledge appear to have been small. He could hardly have failed to see the poppy in its glory at that season, and doubtless it formed part of the "flower garden," as it carpets the spring hillsides of the Bay region to-day.

seen it, seemed a flower garden, offered now to the botanist only a dry, withered field (*ein dürres, ausgestorbenes Feld*). . . . We, however, collected the seeds of many plants and expect to enrich our gardens thereby." Among these was our poppy which these botanists found growing in dry sand where San Francisco now stands.

On negative evidence, therefore, it would appear that even upon its discoverer the golden flower made no particular impression in the field; and doubtless at the late season when the collection was made, only scattering specimens were in bloom. His description of the plant was not published until four years later, in 1820 at Madrid, in the Spaniard Luis Nee's "Horae Physicae"; and the name *Eschscholtzia*[4] *Californica* was given by Chamisso, first, in honor of his companion in labor, "the very skilful, very learned, very amicable Eschscholz, doctor of medicine and equally expert in botany and entomology," and, secondly, in commemoration of the land where the flower was found. From the seeds collected by Chamisso, and later by Douglas, the flower was introduced into European gardens where it is an old favorite. Present day botanists

[4] But Chamisso's name for the genus lacked the *t* that somehow has since attached itself to a word which, one would have thought, was already sufficiently wealthy in consonants.



A group of California wild flowers reproduced from water color drawings by Elisabeth H. Saunders.

classify the eschscholtzia under several species, based on characters of more serious import to the man of science than to the general public, to whom the various species all look pretty much alike. The genus, though growing wild almost wholly within the limits of California, is also found sparingly northward in Oregon and Washington, and strays southward into upper Mexico and across the Sierra Nevada into the Great Basin. The Spanish-Californians reckon it among remedial plants, and as a pain-killer and a soporific it has had more or less vogue in family medicine, as might be expected of it—for it is a true poppy, a member of the same drowsy family with the immemorial flower of sleep and the Shirleys of our garden. Our Spanish people have several names for it, as *torosa* and *toronja* —the latter a curious case of transference, apparently, for the word properly means the grape-fruit; but prettier than either of these is the name it shares with the garden poppies, *dormidera,* the sleepy one, because of its habit of closing its petals at the approach of evening, as though dropping off to sleep. American writers of a sentimental cast have taken kindly to *copa de oro,* cup of gold, which is given in books as one of its Spanish names, but I must confess I have not found it in use among

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the people. It sounds suspiciously like a book-name made up out of a Spanish dictionary.

Close of kin to the Eschscholtzias are several other California genera of poppies, one of which, *Platystemon Californicus,* greets the flower-hunter in early spring throughout the State, lending a touch of soft color, sometimes acres in extent, to plain and mesa. The petals are of the hue of rich cream and the flower is happily described by its popular California name—cream cups. In England where it is cultivated in gardens it is, I believe, sometimes called Californian poppy. The yellow tree-poppy (*Dendromecon rigidum*) is remarkable as being a shrubby member of the family, a large bush often taller than a man, with willow-like foliage amid which the bright yellow blooms gleam like gold double-eagles, spring and summer. Then there are those great, glorious white poppies with a multitude of yellow stamens at their hearts, the chicalote (*Argemone platyceras*), and the Matilija[5] poppy (*Romneya Coulteri*). The former is a thistle-like plant of the semi-arid plains and sandy washes of the south, and while its regal blossoms are as striking as those of the Romneya, the plant

[5] Pronounced *matil'ihah*, the name of a cañon where it is abundant in the Santa Ynés Mountains. The plant's specific name preserves the memory of its first collector, Dr. Thomas Coulter, the botanical discoverer of the Colorado Desert region of southeastern California.

itself is smaller and less imposing. The Romneya is indeed the giant among California wild flowers. The magnificent blooms, with white petals of the texture of crêpe, are from six to eight inches across, and are set singly but in great profusion in the midst of the blue-green foliage, on bushes which are sometimes as high as twelve or fifteen feet. It is of rather local occurrence, though abundant enough where it does grow, from Santa Barbara County to Lower California. It is a favorite in California gardens, where it is better known than in its wild haunts. Indeed most people do not know it for a wild flower at all.

Chaparral and Bee-Pasture

To feel yourself really in the California of your dreams, there is nothing like riding your mustang on a trail through the chaparral. There is something in this word chaparral that smacks of the California soil in a way that no other word does. You have come across it in books of travel and in tales of adventure; you do not know just what it means, but it sounds romantic and Spanish-buccaneerish, and as soon as you arrive you are agog to find out about it. So, some sunny April morning when the air is full of bird song and the roses are blowing fragrant kisses to you from every gate

post and cottage porch, it is you for the mustang and the chaparral trail.

Now there is chaparral and there is chamisal, and to the undiscriminating American sons and daughters of the Golden West, they are the same thing—what the Easterner calls brush or scrub, or in more stately English, a thicket. To the Spanish-Californian, however, there is a difference. Chamisal is a thick stand of *chamiso,* the name which the Spanish apply to the shrubby evergreen greasewood that covers mile after mile of mountain slopes throughout California, particularly in the south, the *Adenostoma* of botanists. Chaparral is strictly a dense growth of more or less thorny shrubs and small trees of various sorts in which the *chaparro,* or scrub live-oak, predominates; and because a rider on horseback will get his clothing cut to shreds by going through it at a rapid gait, he envelopes his legs in *chaparrejos* or *chaparreras,* the real name of the leather overalls that cowboys and novelists have made over into "shaps." Quite as often as not Nature mixes up the two sorts of thicket, and in our discussion of them, they need not be kept separate.

In many places much of this chaparral growth will be found to be made up of ceanothus, popularly known as California lilac or myrtle. There

are numerous species, mostly shrubs but some tall enough to be regarded as small trees. Most of them are very showy in the spring with the abundant blooms, which while individually small are borne in great profusion in clusters and trusses of white and various shades of blue, giving tone to whole mountainsides. Many species revel in the hot sunshine of dry sterile slopes amid gravel and loose rocks, while others are found in cool cañons by living streams or in the protecting shadows of oaks or conifers. To the mountain traveler in California they are among the most familiar of shrubs, and they furnish to cattle and sheep men a valuable browse for their flocks and herds. There is one species of ceanothus indigenous to eastern woodlands, whose leaves in Revolutionary days were turned to a very different use—the making of tea for such of our ancestors as could not or would not buy the real article from England.

Better known to Californians than these wild lilacs, is another shrub or little tree of the chaparral, *Heteromeles arbutifolia,* whose red berries are universally sought in December for Christmas decorations. It is variously known as toyon, Christmas berry, or California holly, though it is in no sense a holly, but a cousin to the rose. In Great Britain, where it was introduced over a century

ago, it goes by the name of California Maybush, the plant being at first regarded as a species of hawthorn, which in England is often called the May. In midsummer the rich green crowns of the toyon —Spanish-American *tollon* of the same pronunciation—are lighted with abundant panicles of small white flowers; but in its native State it is not until the early days of winter when the bushes are all aglow with their masses of red berries, that the plant becomes an object of especial interest. Then every week-end the cañons and chaparral slopes are scoured by parties of young and old in quest of the berry-bearing branches.* As the leaf of the toyon is not at all holly-like, makers of Christmas greenery sometimes mingle sprigs of the berries with the spiny foliage of chaparro, or of still another shrub of the chaparral whose leaves bear some resemblance to holly. This is the wild cherry, a decorative shrub summer and winter, whose glossy leaves glisten like shining morning faces in the sunshine which they love. The dark crimson cherries which are ripe in the autumn and resemble small round plums, look very tempting to the thirsty wayfarer, but are disappointing in having

* A recent California law in the interest of conservation forbids offering *Heteromeles* for sale except from private land, and mutilation of the trees on public domain is made a punishable offense.

but a thin layer of pulp spread over a large stone. What there is of the fruit is pleasant enough to the taste, but like Sam Weller's valentine, one could wish there was more of it. The Spanish-Californians call it islay, and by the Indians it was utilized both pulp and pit—the latter being cracked to release the kernel which was then treated like the acorns and made into meal.

The chaparral trails also give us a new idea in sumacs, which we value in the East for the autumnal glories of their pinnate leaves in red and orange, and their thyrses of crimson fruit, lasting far into the winter. The California chaparral is the home of two or three species so different from the eastern forms as to be unrecognizable as sumacs by the non-botanical. Their leaves are simple, not compound, more or less thick and leathery of texture and persist through the winter. One species (*Rhus integrifolia*) attains the proportions of a small tree, and is known locally as mahogany, because of the rich red, hard wood of its heart. This and the kindred species *Rhus ovata,* possess an especial interest in the character of the berries that they bear. These, which are ripe in late summer, are flat and circular with a thin, sticky pulp densely covered with a fine crimson down. They are very acid, and may be used advantageously to enliven the warm

water of your canteen on a hot day; only do not put them into the canteen itself or the acid of the berry, acting upon the metal of the vessel, may by and by poison the water. The proper procedure is to stir a few berries in a cup of water which quickly becomes as sour as sugarless lemonade and as refreshing. For this reason these sumacs also go by the name of Indian lemonade berry.

The manzanita, of which there are three or four species indigenous to the State, is one of the best known shrubs of the chaparral belt, often forming thickets impenetrable except by the beasts of the wild. The tortuous branches polished and dark red, and the persistent, grayish leaves which a twist of the petiole usually sets vertical, make the manzanita one of the most noticeable of shrubs; and the beauty, smoothness and hardness of the wood fire the cane-collecting traveler with an ambition to add a manzanita specimen or two to his armory, but he seeks long for a stick of it that does not twist a dozen different ways to the foot.

"I never yet," remarked an old mountaineer, "saw a manzanita cane that didn't remind me of a bow-legged man for crookedness, and I've been looking for a straight one these thirty years. They tell me there's an institution back East that has a standing offer of five thousand dollars for a

A roadside bank carpeted with two species of the South African marigold

straight, natural stick of manzanita five feet long. I'd like to be stake holder for that offer!"

The fruit is a berry in shape like a tiny apple (which is the meaning of the Spanish word *manzanita*) but the likeness goes no further, for it is dry, stony and puckery. It is, however, packed with nutrition for stomachs that can digest it, and bears and Indians are in that class. Mr. V. K. Chesnut states that the green berries, while so indigestible as to cause colic if consumed in quantity, are tart enough to quench thirst, a fact worth knowing to any one caught waterless on the dry, hot hill sides which the plants often occupy. The Indians of Northern California use them in various ways, but the fruit must be eaten in moderation or the intestines become stopped to a degree that may cause death. Manzanita cider, which some tribes make to perfection, appeals even to civilized palates. By the mountain white folk the berries are gathered for jelly making, and one of the pleasant incidents on the chaparral trail is your coming upon a party of happy-faced lads and lassies at their manzanita harvest, shouting to one another across the expanse of bushes, to the accompaniment of their tinkling pails. The Indian way is to thrash the berries into the huge maws of their conical burden baskets—work which is done by the squaws, the

babies meanwhile strapped in their wicker cradles and laid on a shady bank, or, as Mr. Chesnut tells, wrapped in the flexible green leaves of the mountain iris, which protects them from thirst.

To the bees the chaparral is one vast honey pasture, as yet undisturbed by the march of improvement which has all but wiped out the glorious wild gardens that covered the plains and valleys of California until a generation or so ago. From January, when the clustered, waxen little urns of the manzanita open to the sun, to December when late lingerers like the Zauschneria or wild fuchsia, and certain mints and composites may still be found, there is always some bloom, though the great honey harvest is during the six months from March till September. Besides the yield from the flowers of the shrubs that make up the chaparral there is unstinted nectar to be had from myriads of other blossoms that awaken with the advent of spring and brighten the sunny interspaces of the belt—scarlet castilleias and minty monardellas in blue, yellow hosackias, native clovers and purple lupins (which in the more open places dye the hillsides with solid color), wild buckwheat and sages white and black, wild gooseberry, blue phacelias and the clambering white-starred vines of the chilicothe or wild cucumber. Here we find thickets of yerba santa in solid

sheets of lavender and pentstemons of several species, one that nearly every one knows bearing panicles a foot or two long of vivid scarlet trumpet-shaped flowers, which have suggested the popular name, scarlet bugler. This is *Penstemon centranthifolius,* and its colonies brighten the chaparral sometimes by the acre. The bees have no monopoly of its sweets, for upon it the hummers levy special tribute—a fact that has given rise to another pretty name, humming-bird's dinner-horn. No less conspicuous in their way are the mimuluses [6] or monkey flowers, their yellow or salmon-colored blossoms set thick upon the little bushes somewhat suggesting azaleas.

Certain of the chaparral plants are peculiar in withholding their bloom until after months of drought. Then, one day, after such a drying out as would have mummified an ordinary plant, the flowers spread their exquisite corollas to the air and light. Such is a Pacific Coast relative of the garden's bleeding-heart—the golden dicentra, which I have collected in the breathless heat of many a mid-July noon; and a larkspur (*Delphinium cardinale*),

[6] Cousins of the old-fashioned musk plant of our grandmothers' window boxes, which is a California wild flower growing by mountain brooks—*Mimulus moschatus,* an introduction of Douglas's. His original collection of it, however, was in Oregon in 1826. Many other California species have long been prized in the gardens of Europe.

with flowers like flames of fire, that bloom often on stalks from which the suns of August have scorched every leaf. But the glory of the chaparral flowers —at least in the southern half of California—is a certain yucca (*Y. Whipplei*), which in May and June lifts its tall, slender panicles on the dry hillsides like great exclamation points. The plant itself is a stemless mass of stiletto-like leaves about two feet long, which radiate fiercely in all directions forming an unapproachable hemisphere squat upon the ground. From the midst of this vegetable hedgehog the flower-stalk rises like a spire to a height of ten, twelve or fifteen feet, breaking throughout half its upper length into a myriad creamy cups of solid bloom. The Coahuilla Indians, with utilitarian thrift, boiled these waxen blossoms and ate them. Were poets made of that they feed on, what rhapsodies and lyrics might not a dinner of yucca flowers inspire! Town folk who go to the hills for an outing bring hundreds of these titanic yucca bouquets back with them, severed at the base of the stalk, and borne on their shoulders or in carriages or automobiles, to be stood in some corner at home where they remain fresh for days. The plant dies after flowering, but offsets from the old root continue the generation. Miss Parsons in her excellent manual, "The Wild Flowers of Califor-

nia," gives as a common name of this magnificent yucca "Our Lord's Candle," which it well deserves —no doubt an English version of some stately Spanish appellation, *La Vela del Señor,* perhaps.

In these chaparral-covered slopes of the foothills, at the mouth of some flowery cañon, where a spring collects its limpid waters in a lily-haunted dell, one comes now and then upon a bee-rancher, his shack set close to a little city of white box-hives. A decade or two ago, there were many such, though nowadays the encroachment of millionaires who are awakening to the worth of such view-commanding sites for their white-walled villas, is making the land too valuable for these old-fashioned apiarists. An idyllic, Virgilian sort of life it seems to have been —the bee-rancher's—quite suitable for this Land of the Afternoon, with a vast outlook over orchard and vineyard and grain lands to the sinking sun gilding the lazy waters of the Pacific. He had his cow in the chaparral, and there was his gun on a pair of pegs over his fireplace to shoot rabbits now and then or perhaps a deer, and there was a little patch of garden, when the spring had irrigation water to spare. He had few wants, and what he could not raise or shoot, he bought with cash obtained by a trip to town with a few cans of white-sage honey from his hives, or a load of greasewood

roots grubbed up in the hills and sold for fuel. On the lonely summit of one of the foothills of the Sierra Madre north of Pasadena, there is the solitary grave of one of these old-time ranchers of the chaparral. A half-obliterated trail, known to few, leads to it through a fragrant tangle of sage, and on the rough granite rock that marks this resting place of a kindly heart, is carved this inscription: "Owen Brown, son of John Brown, the Liberator, Died Jan. 9, 1888, Aged 64 years."

Soap from Bushes

"I suppose," said an old Californian to me one day, "if I were to tell you that soap grows wild out here, you'd think it was another California tall story."

We were jogging along a foothill road in a buckboard with a pair of broncos, and I noticed my companion was eyeing the slope of chaparral at one side, where the California lilacs were blooming by the twenty acres.

"Well," I replied, "a tenderfoot likes evidence, you know."

He pulled up the horses, and alighting, stripped from the nearest bushes a handful of the blossoms; then dipping his hands into a ditch of running water by the roadside, he rubbed water and flowers well

together for a moment and to my astonishment his hands were bathed in a foamy lather. Then he rinsed them and spread them before me.

"It does the work, you see," he grinned.

I got down from the wagon and did it myself. There was no deception. My hands were as clean as the best toilet soap could have made them, soft as velvet and fragrant with a spicy fragrance.

The Californian chuckled.

"It's hard to beat the truth about this State," he remarked complacently. "When our people lie about things, it's just a perverted habit—they don't *have* to. There are a dozen sorts of these wild lilacs in the chaparral, and all of them that I have tried have the same soapy principle in the flowers and also in the green seed-vessels. Now I'll tell you something more. When Nature stocked us up with soap, she didn't stop with one sort; she put several brands on the shelves. Here's another one —more popular than the lilac flowers, for somehow very few people, even Californians, seem to know about them. But here's one most country people know."

He stooped and with a big jack-knife that he took from his trousers' pocket, he began digging about a stemless plant, whose broad, grass-like leaves, somewhat crinkled, were sprawling on the ground. After

going down three or four inches, he grasped the underground base of the plant, and pulled at it steadily. In a moment it came loose, and he held up to me what looked like a ball of coarse blackish burlap. Examination showed that the root of the grassy plant was a bulb about the size of an onion, but more elongated, encased in a snugly fitting fiber coat, which was readily stripped off.

"This sort," remarked the Californian, "is amole.[7] At least the Spanish people call it that. People that prefer American names say soap-root. Nature does up each of these cakes in a wrapper. See, when this fiber is stripped off, here is a nice clean ball of soap. You crush this up in your hand"—suiting the action to the word—"and it just leaks soapiness though there is more in the dried bulb."

Rubbing his hands in the water, a cleansing lather was produced as in the case of the wild lilac flowers.

"The Indians knew all about this plant," he went on, "and while most white people have an idea that Indians don't naturally wash themselves, they're mistaken. This amole makes a capital hair wash, and the Indians knew it long before we did. They found, too, that cooking dispelled the soapiness, and

[7] Botanically, *Chlorogalum pomeridianum*, a plant of the lily tribe, peculiar to California.

California soap-root. At the right is a bulb stripped of its fibrous covering—a natural cake of soap

Showing relative sizes of cones of California's three largest trees: at left, sugar pine, 18 to 26 inches; at right, upper, Big Tree, 2 inches; lower, redwood, ¾ inch long

made the bulbs as good to eat as potatoes—great act, wasn't it, like a sleight-of-hand trick. Ladies and gentlemen, here's a cake of soap or a potato, as you please! Which shall it be? Then they knew another queer thing about it—that you can catch fish with it. They would dam up the streams, and throw mashed amole in the water. That stupefied the fish, it seems, so they floated up to the top of the water, where Mr. Indian gathered them in. That wasn't sport but it got results, and I guess the fish liked it better than being hooked. Of course our law doesn't allow that sort of pot-hunting now."

"Yes, sir," my Californian continued, as he climbed back into the wagon and started up the broncos, "there's no excuse for going grimy in this State, where soap grows on bushes. Why there's even a kind of pigweed—there's some there"[8]—pointing with his whip to the roadside—"that yields soap. It has a root like a carrot in shape; you pound it up on a stone, and with a little water, you've got your soap. Then there's chili-cojote, that creeping bad-smelling vine we passed just now, that bears yellow gourds on it that look like oranges scattered over the ground—mock orange some folks call it; you can mash its roots and use it for soap; but a better root is from the Spanish bayonets—

[8] *Chenopodium Californicum.*

species of yucca—that grow especially on our deserts, and in fact all over the Southwest, including Arizona and New Mexico. You have to grub those roots out with a pick, for they are big and go so deep for their moisture in that dry land, and it doesn't pay an American to bother with them. Mexicans and Indians make a practise of digging them, cut them in pieces like so many bars of soap, soften them by pounding with a hammer or stone, and then dipping a piece in water they rub it on their hands, and get a fine lather. They call that amole, too."

VI

INDIAN USES OF CALIFORNIA PLANTS

WHATEVER the shortcomings of the California Indian, whom it is the fashion to put down at the tail of our class of aborigines, he was not a bad botanist in his native estate, and what he knew about the wild plants and their uses in the economy of the simple life makes quite a respectable showing.

Pine-nuts and Acorns

Indian life throughout California before the white man came and for two or three generations afterwards in the wilder parts of the interior, was something of a Saturnian matter. The mildness of the climate reduced the necessities of clothing and shelter to a minimum. There was no government—even native—making vexatious laws to restrict a man's going and coming, what he should eat or what he should drink, for aboriginal California was remarkable for its lack of social organization. There were no tax collectors; there was land enough

for everybody, and a living was to be had for the picking from the shrubs and trees and wild grasses. To this abundance of natural foods, perhaps, is due the fact that the Indians of the Pacific Coast, unlike their brethren to the east of the Sierra Nevada, knew nothing of agriculture. There was no need of planting and tending crops of maize and beans when limitless groves of oaks and nut-pines dropped their nutritious fruits into the open hand. Acorns and pine-nuts were, indeed, the California Indian's staff of life, and still are in many rancherias of the more remote mountain districts. The pine-nuts, or piñons, to use the common name by which they are called in the Southwest, are the seeds of several species of pine—particularly, in California, *Pinus monophylla* and *P. Sabiniana.* The former tree is commonest on the desert slopes of the Sierra Nevada, and occurs southward to the Mexican line; the latter species is most abundant in Central California from the coast to the western slope of the Sierra. *Pinus Sabiniana,* indeed, because of the extensive use of its seeds by the Indians, has acquired the popular name of "Digger" pine. The gathering of the seeds makes a festival for those Indians who still consume them, and readers of John Muir's "Mountains of California" will recall his picturesque description of such a junket. The method

usually followed is to gather the cones while still closed, and cast them into a fire of sticks made in the open. The heat of the flame has the effect of opening the cones and consuming the resin with which they are abundantly gummed. The nuts are then easily picked out. Even to civilized palates these little pine-nuts, which are about the size of marrowfat peas, are really delicious, besides being rich in nutriment and very digestible. Their slightly terebinthine flavor when raw is more or less dissipated by roasting as we would roast peanuts or chestnuts, a fact that the Indian knows as well as we. Large quantities of piñons find their way into city markets, and are much esteemed particularly by the Spanish element in our population.

"Yes, sir," said "Doc" Syvertson, who kept a little mountain resort in the piñon country, "piñons is sure good fruit—they're the sort when you git the taste for 'em you can't stop eatin' of 'em till you've cleaned up the works. In season the trails all over the Southwest is lined with piñon shells. Folks don't eat 'em by the pound—they eat 'em by the mile. How long do they keep? Lord, nobody knows that—they *don't* keep; folks eat 'em too fast. They have it all over peanuts, believe *me*. Back East in New Mexico when me and Sullivan kept store oncest among the Navajos, a sack of piñons

passed the same as banknotes while they lasted; but they was all gone by New Year's."

Pinus monophylla—that is, one-leaf pine—is a chunky little tree which has botanic interest because its needles, instead of being bunched in groups of from two to five as in other pines, occur singly; but as a tree it is without features that would be apt to attract the attention of one not interested in technical details. The Digger pine, however, is a remarkable looking tree, wan and wraith-like because of its long ashen-gray foliage, which so markedly differentiates the species from all its fellow conifers that it can hardly go unnoticed by even the careless.

As to acorns, there is considerable choice among the various species of oaks, some, from the Indian's point of view, producing much better food material than others. One of the most distinctive of California varieties is the black or Kellogg oak (*Quercus Californica*). Its name preserves the memory of Dr. Albert Kellogg of San Francisco, a Forty-niner, who, leaving to others the digging of gold, devoted himself to exploiting the mines of his adopted State's botanical wealth. The acorns of this oak have always been among the most prized by the Indians, and may be gathered from the Oregon line to Mexico. The nuts of the beautiful val-

ley oak (*Quercus lobata*)—the *roble* of Spanish nomenclature—are also much used. There is an understanding among the different bands of Indians as to the usufruct of the tracts, and each is expected to keep to its own preserves. In the autumn, the gatherers collect the winter's store into baskets and barley sacks, and bring it into the rancheria, where up to a generation or so ago the stock was stored in huge basketry receptacles, lifted above the ground on posts to keep rats and squirrels at a distance. Such quaint granaries are still to be met with in out-of-the-way districts.

The acorns are not eaten raw but are put through an elaborate course of preparation. First the shells are cracked off, then the kernels are ground by hand with a stone pestle in a stone mortar, at the cost of much muscle and patience to make the meal as flour-like as may be. The mortar is sometimes portable, but in many cases the grinders have to go to the mortar, which is a huge flat rock or boulder, in which depressions are availed of for the milling. Throughout California the traveler comes upon such rocks worn away in spots in hollows. Usually there are dozens of mortar holes in one rock, and one can imagine how throughout the centuries the Indian squaws foregathered there on sunny winter days and mingled the music of their voices with the

drumming of their pestles, as they crushed acorns into meal. After the grinding, the next step is to extract the astringency and bitterness which characterize the acorn. The Indian has found that water will remove these unpalatable principles; and so the meal is subjected to a process of leaching, the result of which is a dough, in consistency much like the bread dough of our own kitchens. This is either baked into little loaves, or boiled into mush and eaten as we eat cereal breakfast-foods, except that the Indian dispenses with the concomitants of cream and sugar, or even salt. It is rather insipid and not entirely palatable to most white people, but it is unquestionably nutritious, and it has been suggested that the universal use of it among California Indians may have contributed to the fatness of body which is characteristic of them as a race. The members of Portolá's expedition from San Diego to San Francisco in 1769, were reduced to eating acorns when provisions ran low, but found them to their unaccustomed stomachs productive of indigestion and fevers—doubtless from lack of knowledge as to their preparation.

Indian Potatoes and Pinole

The term "Digger" applied to California Indians, was given them in contempt by the early American

Toluache, a famous Indian narcotic

settlers because of a practise of grubbing up wild roots for food; though why this should be less aristocratic than digging potatoes or pulling turnips is not apparent to the impartial mind. Strictly speaking, however, it was not so much roots as the bulbs of certain plants more or less related to the universally esteemed onion, that the Indians were delving for. The abundance of bulbous species of the lily tribe throughout California is one of the noteworthy features of plant life on the Coast, and the Indian long ago discovered the nutritiousness and palatability of these juicy vegetables of the wild. Such bulbs are lumped by old settlers under the general name of Indian potatoes, in conformity with what seems almost a rule among pioneers to misname every plant new to them; for such bulbs are not in any sense related to the potato, though they are cousins to the onion. Most famous of these plants, perhaps, is the camas; but the best camas fields occur north of California in Oregon and Idaho, where so much value is placed upon this native food plant that at least one Indian war has been provoked by the encroachments of the white settlers upon the Indians' preserves of it. Two or three species of the beautiful tulip-like flowers known as mariposa lilies or tulips (*Calochortus*); a species of dogtooth violet, or erythronium, which is a beauti-

ful yellow lily; and different kinds of the widely distributed tribe of Brodiæa, are of this interesting class of food plants, which perhaps formed a useful dietetic balance to acorn and pine-nut. Certain native species of clover also were eaten raw—leaf, stem and flower—the honey in the blossoms doubtless sweetening the mass and adding an agreeable attractiveness to this Nebuchadnezzar diet, for every Indian the country over is passionately fond of sweets.

Many of the so-called "potatoes" have a pleasant nutty flavor and were eaten raw,[1] but most of them the Indians preferred to cook. In this day of fireless cookers, the process employed by the Indians is not without interest as showing that they had anticipated the same principle. A pit would be dug in the ground and lined with stones. Into this a quantity of fire-wood would be placed and ignited, making a huge bonfire which would heat the stones, and upon dying down would leave a good bed of hot ashes. Upon these the "potatoes" would be spread, covered with a thick layer of leaves or brush, and upon this would be laid a covering of dirt sufficient

[1] Mr. Carl Purdy, of Ukiah, who has made a specialty of introducing native California bulbs into cultivation, and employs Indians to gather wild stock, states that it is almost impossible to secure a sufficient supply of some kinds because the red collectors cannot refrain from eating them as fast as they dig them up!

to imprison all the heat. On top of all another fire might or might not be built, and then the cooks went about other business. After the expiration of a given time, perhaps twelve or twenty-four hours, the pit would be opened and the bulbs taken out ready for consumption. This style of cooking is still to some extent employed by the Indians, and has the effect of developing all the innate sweetness of the article cooked, as well as of increasing its digestibility.

Another famous class of Indian food is what has been known ever since the Spanish occupation as pinole, a word used to designate a meal made from the ground seeds of certain plants, well known to the squaws and collected by them in baskets. The seeds employed for this purpose were very numerous, as, for instance, those of numbers of species of grasses, notably wild oats, and a species of Salvia, called *chia* by Indians, Spaniards, and Mexicans alike. The different kinds of seeds were gathered separately. The squaws who did this work would go into the places where the plant sought for grew, and with a receiving basket held in one hand and a sort of basketry ladle resembling a tennis racquet in the other, would bat the seeds into a basket until a sufficient quantity was had. Before being eaten the seeds were parched. This was ordinarily done

by tossing them about in a flat basket with bits of live charcoal inter-mixed.[2] The seeds were then ground in a mortar into meal and consumed either dry or as mush.

Chia, most widely known of these pinole seeds, is a very pretty wild flower, called by botanists *Salvia Columbariae.* Its blue blossoms are borne in interrupted whorls upon a spike that rises from six to twenty inches above the clustered gray-green root-leaves, and in point of beauty are worthy of association in the garden with the related blue and red sages beloved in cultivation by everybody.

It is a plant of so great value that it is a pity it is not better known among the white population to-day. The use of the seed among the aborigines of our Southwest and Mexico is of great antiquity. Archeologists engaged in their pet diversion of ransacking abandoned cemeteries, have found it in quantity in ancient graves, as of the Santa Barbara Indians, placed there to feed the vanished soul on its journey to its long home; and it was among the choice offerings of the natives to their Spanish visitors in the early days. The individual seeds are quite tiny, and to the lordly American of to-day

[2] Costansó in his account of the Portolá Expedition in 1769, speaks of this practise of toasting seed in baskets and mentions hot pebbles as used.

it seems ridiculous that one should bother to collect such small matters for a man's meat. They are exceedingly abundant, however, in each little pod, and when it is remembered that there is nutrition enough in a teaspoonful of seeds to support a man for a day on a forced march (according to the statement of the late Dr. Cephas L. Bard of Ventura, who made a study of native plants), the job of chia harvesting is not so hopeless as might appear at first blush. The Indians managed it in two ways. They either gathered stalk and all, threshing and winnowing it afterwards like grain; or, as was the usual California custom, they went afield with baskets and paddles and beat the seeds directly from the plant as it stood, into the basket. Chia seed is utilized for both food and drink. The raw seeds, soaked in water, produce a refreshing, nutritious, mucilaginous beverage, with a slightly aromatic flavor characteristic of the mint tribe to which the plant belongs. A touch of civilization may be given to it by adding sugar and a little lemon juice, and you have a summer drink whose novelty will bring any hostess fame in this *blasé* age—a drink that is grateful even to a nauseated stomach. The more usual disposition of the seeds, however, was first to toast them by tossing in a basket with live coals, as in the case of other pinole, then grinding them in a

mortar into meal. Water added to the meal caused it to enlarge to several times the original bulk. It was eaten as a mush or a thin soup. There is nothing about the mild linseed flavor that a white palate need shy at, and the ease of carrying the meal and of cooking it, combined with the high percentage of nutrition, makes it useful for campers and travelers in the wild to-day. To the pampered taste, the addition of a little sugar is a help. The Spanish Californians, no less than the Indians, set great store by chia, and as late as 1894, Dr. Bard records, it was in demand in Southern California at six to eight dollars a pound. It is claimed for the seeds by some medical practitioners that they are of benefit in gastro-intestinal disorders. The lovely thistle-sage (*Salvia carduacea*) a first cousin of chia and often found growing with it, produces seeds which are said to possess similar properties and to be quite as useful.

Among grasses whose toasted seeds, ground to meal, have formed a part of the diet of the desert Indians, is one which the Coahuillas call *song-wall* and botanists know as *Panicum Urvilleanum.* It is indigenous to a very restricted area of our country —known, in fact, to occur only in the sandy deserts of Arizona and Southern California, though it also appears again in Chile and Argentina. The species

is closely related to the oriental millet (*Panicum miliaceum*), which has been cultivated over seas from time immemorial for its edible seeds, and is mentioned in the Old Testament (Ezekiel iv, 9). It is interesting to find that the California Indians should have discovered the usefulness of this rarer American grass, distinguishing it from many that are dietetically worthless, and turned the seeds to account just as the ancient Hebrews and Egyptians used to do, and as the Arabs do to-day, with its more famous Old World cousin.

Mescal de Comer

While the thistle-sage is found principally in the south, the true chia is met with throughout the length of the State, even in the deserts. The desert Indians, be it known, had a very extensive ménu. Paradoxical as it may seem, "the Land of Lost Borders" is a good nursing mother to her children, and a desert Indian of the old school was a hard subject to starve. Besides chia, the seeds of several other plants—those of at least two sorts of sage brush for instance—went into pinole, and the fruits of several cactuses, the prickles brushed off, were consumed—sometimes raw, sometimes cooked. But the great treat of the year came—indeed still comes—when the buds of the mescal are putting up. By this

Aztec word Indians and Mexicans call various species of Agave, which abound in the Southwestern deserts. The California species grows on the sun-scorched slopes of the sierra foothills that give on the Colorado desert. It is a wild cousin of the century plant of our gardens, and, like it, radiates fat, olive-green leaves stiletto-pointed. For years the plant's stock of energy is expended on the development of these leaves—a *cheval-de-frise* of protection to the secret it carries at its heart. Then some day in early March a new impulse causes a bud as big as your fist to push out from the center of the foliage. If not disturbed, this bud would develop in a few weeks into a tall stalk surmounted by a panicle of white flowers, but long before this can happen, the news of the budding has spread throughout the Indian rancherias, and from all directions come Indians—men, women and children—on foot and on horseback and in wagons, to camp at the mescal patches and make harvest of the swelling lusciousness. At a certain stage of their development, the buds are cut out and placed in pits previously lined with stones and made hot by great bonfires burned within them. The buds are then covered over with leaves, earth and more hot stones, and left for several days to steam within. Upon uncovering the pits, the mescal is found thoroughly

cooked to a soft brown mass of molasses candy consistency and flavor. Part of this is eaten fresh with great gusto. The remainder is dried in the sun and carried home to mountain cabin or desert wickiup to be consumed later. It is, indeed, even to white palates not a bad titbit, and the Indian, delighting as he does in all manner of sweets, is passionately fond of it. The mescal buds are capable of making by distillation one of the fieriest intoxicants known, as hot, in "bad man" parlance, as "a sulphuric acid cocktail with a cactus-joint for a cherry"; and the fame of this liquor mescal as manufactured by Apaches and Mexicans is much more wide-spread than that of the innocent food stuff called *mescal de comer*—mescal to eat. The making of a distilled liquor from the plant seems not to have been known to any Indians before they were taught the process by white men, and the California tribes appear not yet to have heard of it, or at any rate to have had the good sense not to resort to it.

Doctor Flora

From the feast to the doctor appears to be a natural transition, so something may here be said about the medicinal herbs employed by the Indians. East and West, Indian herb remedies have ever possessed a certain glamour for a considerable part of the white

population, though the medical brother is disposed to flout them as poor stuff. Old Manuelito, whom I met on the desert one day and who favored me with a report on the medicinal value, as he conceived it, of some herbs which I had submitted to him, put the matter this way:

"Sure good for Indian; but for white folks—*quien sabe?* Maybe no good."

The troubles for which the redman resorted to plant remedies, were usually coughs and colds, rheumatism, sore eyes and digestive disorders; and if an herb was good for any of these, it was often considered good for all. At the present day, in spite of the illuminating influence shed by Government doctors and school teachers, the California Indian preserves faith in his own medicine man, and even among the young folk, whom white heresies have made skeptical of much of the tribal tradition, the remedial ways of the old people are held in respect. As Manuelito expressed it:

"White doctor him pretty good for colds; Indian sick abed, white doctor him no good."

Perhaps the most widely known of California plants used medicinally by the aborigines, is the bitter-bark, wahoo, or coffee berry of the American pioneers, or the *cascara sagrada* (sacred bark) of the Spanish-Californians—names given to a vari-

able species of Rhamnus occurring from Washington to Lower California. It is the one Indian remedy which the present day pharmacopœia endorses quite heartily, furnishing perhaps the best laxative medicine known to the world. In the north it is a tree reaching a height of twenty-five or thirty feet, but in the south it is reduced to a non-deciduous shrub, easily recognized in winter by its persistent crimson or black berries. These are very thin of pulp, and the large olive green seeds (usually two) are flat on one side and convex on the other, sufficiently resembling grains of coffee to have given rise to one popular name. The part used medicinally is the dried bark, which is steeped in water, and is both tonic and harmlessly laxative. Old Manuelito is very sure, however, that when cutting the bark, you must peel it downward; if you cut it upward, the effect will be to make the drinker vomit!

A hardly less famous medicinal standby of the California Indian, and one which has always had a loyal white following, is *yerba santa,* that is, holy herb—a species of Eriodictyon. It is found only in California, a shrubby denizen of dry, sunny hillsides, and is marked by shiny dark green leaves, in shape and appearance somewhat like those of the peach. The foliage is covered with a sticky resin of

balsamic odor, and is made into tea, or, when dried, is smoked or chewed like tobacco.

"And what disease is it good for?" I ask Manuelito.

"Por todo, señor—for every thing," he says with prodigal inclusiveness; but every old Californian will tell you it is the finest thing in the world to loosen up a hard cough. The taste of the leaf is more or less resinous and bitter at first, but this gives place to the peculiar sweet and cooling sensation which follows the chewing of mint and a sip of water. To the wild-flower lover one of the memorable sights of a California outing is furnished by the thickets of *yerba santa* in bloom—the violet or lavender flowers covering the bushes like a gauzy veil—gently undulating as the breeze sweeps over them. Another yerba of great reputation is *yerba mansa* to be found in the damp meadowlands and those boggy places which Californians are disposed to call "senecas" (Spanish, *ciénagas*). This is the *Anemopsis Californica* of the botanies, a low-growing plant which from its leafage we might guess to be a sort of dock, until in late spring the flowers appear and put another face on the matter—a conical disk surrounded by a showy white involucre. The inflorescence is one of Nature's make-believes, as in the case of the dogwood bloom—the showy white-

ness not being petals, as most people think, but simply petal-like bracts, the true flowers being packed together in the central disk. The peppery root is the part most prized, and is used in several ways for the relief of throat and lung diseases. Even white doctors are inclined to think it may be of benefit in cases where the mucous membrane is affected. The Spanish name by which it is universally known in California means tame herb, and one wonders how it came by such an inappropriate appellation, for it is not a domesticated plant but a wild one. Perhaps it is, as Manuelito says, that the correct name is not *yerba mansa* but *yerba del manso,* "the herb of the tamed Indian." The neophytes at the old Franciscan Missions of California were called *mansos,* and it is probable the white folk learning through them of the virtues of this now popular herb, dubbed it accordingly. Then there is the Spanish-Californian's famous tonic and fever remedy, *canchalagua* (*Erythraea venusta*), whose pink stars abound amid the wild grasses, but whether the Indian used this bitter plant, or whether it was adopted by the whites because of its relation to the bitter gentian, I do not know.

On the desert every prospector and "desert rat" knows canutillo, though he may call it Chihuahua grass, or desert tea, or half a dozen other things.

Botanists will have it that *Ephedra* is its only proper name. It is a leafless mass of green stalks, somewhat resembling equisetum or horsetail, and in its season bears queer little brown cones containing black seeds of unbelievable bitterness. In the natural life of the desert Indian a decoction made from the green or dried stalks was a sovereign tonic, and it is still in such use by redman and white. Then there is creosote bush—the famous *Larrea Mexicana* mentioned by every journal-keeping pioneer that crossed the California deserts in pre-railroad days. "Celebrated but totally useless," is the way the botanist, John Torrey, handles it, "the surest indication of a sterile, worthless soil that can be found in the vegetable kingdom."

We know now, however, that the soil in which it grows is by no means sterile or worthless, and if Torrey could visit the desert to-day he would find planted to the fruits of civilization large areas formerly given over to the creosote bush. The newcomer on the desert is pretty sure to notice this shrub, never out of leaf, and bearing in its season a pretty little yellow flower, to be followed by seed-balls fuzzy and white. The shrubs grow at decent intervals from one another, and look for all the world as though they had been carefully set out by a Scotch gardener, so that the wastes of their inhabit-

ing are given a remarkably green, beautiful and cultivated look. The gray stems, curiously banded in black, are sometimes resorted to for fire wood by campers, in default of other material, and give off an offensive smell suggesting creosote, as do the small varnished leaves. Old Manuelito calls the bush in his Coahuilla-Spanish patois, *hedeondía* (stink-bush); but not disrespectfully, for his people believe they have found the proverbial heart of good in this thing of evil, and make of the foliage a famous bitter tea. A little sipped before breakfast, Manuelito tells me, acts as a tonic; a little more induces vomiting, but this is a relief to a man sometimes. Applied exteriorly as a liniment, it is healing for sores and wounds. It also has virtue as a remedy for colds—in fact, is another instance of good "por todo."

Down in Manuelito's sandy melon patch crouches a plant with leaves of a sullen, poisonous shade of green, from out of which rise wonderful trumpets of bloom, purest white with now and then a blush of purple. It looks and smells exceedingly like the Jimson weed of Atlantic dumps and vacant city lots, and is indeed its far west cousin, *Datura meteloides*. Manuelito knows it well as does every Indian from Texas to the Pacific. All the Southwest calls it *toluache*, and it is virulently narcotic.

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A little of its characteristic principle induces delirium and too much causes death. The Indians—the medicine men, especially—formerly made considerable use of it, though at the present day it is very generally avoided. Old Manuelito liked to tell about it. It seemed to bring back memories of the good old, wild old days.

"You eat little bit, *muy poquito,*" he explained, "and you go crazy, run around wild, all same loco. Fiesta come, people put leaf in water, make little tea; dancers drink little bit, not much; only men drink; boys no. By and by, they fall in fire; no hurt. Toluache make so you see things nobody else sees. My grandfather him great medicine man. Once there was a man and him die. Nobody know why. My grandfather him drink toluache; by and by, see things what make man die. Another time, man lost a burro; no can find. My grandfather drink toluache—not much, *muy poquito*—see where burro gone to. Man, him go there and find burro."

Manuelito rolled a cigarette meditatively.

"Toluache very deceiving, too," he went on. "One time Manuelito drink a little; see all kind of animals; no feel nothing; no heat, no cold. Water run in ditch, Manuelito listen and can hear; no can see. Very deceiving, toluache."

If there is one kind of medical lore more than an-

other supposed to have been possessed by the Indians, it is that pertaining to the cure of rattlesnake bites; and wherever you travel in California, you hear of these Indian medicines. Your hardshell scientist dismisses them all as valueless, and when confronted with certified instances of recovery under Indian treatment, puts up the counter-theory that rattlesnake bites are not necessarily fatal, and such cases would have gotten well anyhow. Perhaps the herbs most widely believed in to-day are those called *yerba de víbora* (snake herb)—a name applied to two or three species of umbellifers—and *golondrina,* one or two species of Euphorbia. The latter are small herbs with milky juice, prostrate and mat-like, and found in all sorts of situations where snakes are apt to be, from mountain top to desert plain. In the midst of the small, grayish, round leaves, are tiny twinkling flowers surrounded with white collars. To the eye of fancy, the plant in color and marking may suggest the hide of the rattler, and as the Indian was, and in his heart doubtless still is, a believer in the doctrine of signatures—once generally accepted by white Galens of repute—it was natural for him to take the hint and put *golondrina* on his list of cures. A poultice was mixed of the mashed leaves and bound on the wound, while a tea made from the whole plant, was drunk.

The average Mexican laborer believes in it implicitly.

Plants of the Weavers and the Basket Makers

But life is not all feasting and going to the doctor; even California Indians felt the advantage of some sort of clothing and of certain manufactured articles in their domestic economy. For their simple needs in these lines several wild plants have been drawn upon for the raw material. Among these is the so-called Indian hemp (*Apocynum cannabinum*)—one of the very few floral species common to both our Atlantic and Pacific coasts. The California Indians soaked and pounded out from this, as well as from species of Asclepias, Agave and Yucca, valuable fibers for weaving such articles as petticoats, sandals, saddle blankets, ropes, carrying nets, and bow strings. Collectors of Indian curios know the charm of this sort of aboriginal work and are eager to secure it, but it is now all but obsolete. Here and there, however, among the rancherias of mountain and desert, one finds old people who practise the ancient handicrafts, and only the other day from fat, old Francisco at Palm Springs, I got a pair of curious old-fashioned desert sandals, with flexible soles an inch thick and corded tie-strings, all made from the white fiber of the agave or mescal.

To the average white person, however, the most interesting handicraft of the California Indians is their basketry, the one art in which they have excelled, and because of which their reputation as artists is assured. While baskets are made by many tribes of Indians there are not any that equal the best of Pacific Coast workmanship, notably those of the Pomos, in Northern California. Of course every Indian squaw is not capable of touching the high-water mark of perfection in her art, any more than every Caucasian artist is capable of being a Corot or a Michael Angelo. Nevertheless, the making of any Indian basket means the possession of some degree of artistic instinct combined with knowledge of plant life and much patient industry. It is not made of just any kind of grass on a frame work of just any kind of twigs, but the materials must be prepared from a few selected sorts of plants which long experience has taught the Indian are the best.

At a little southern rancheria with which I am acquainted, there are three or four old women who still practise this most primitive of arts. Their work is of the coiled kind, not woven as are the baskets of the Pomos, and every summer at a certain time which they know to be right, they, or some of the men of their family, make an excursion by wagon or on horseback, or if need be afoot, to a par-

ticular cañon that they know twenty miles distant. There a grass grows which they use for making the coils of their *batéas* or basin-like baskets. It must be this specific kind of grass, which the Indians distinguish from others that look like it quite as correctly as the trained botanist does. The latter calls it *Epicampes rigens,* and it has to be gathered at a certain stage of its ripeness, neither too green nor over-ripe. There are also certain plants (*Sueda suffrutescens,* for instance) which properly treated produce the dye for the coloring of the wrapping of the coil that makes the design. This wrapping, again, is a matter of especial choice. It is made of one of two plants used for the purpose. One is a species of sumac (*Rhus trilobata*), abundant throughout California, and so well known for its use in this way as to be popularly called "squaw-bush"; and the other is a particular species of rush (*Juncus robustus*), whose tall slender stem possesses the unique quality of providing three or four colors in the same piece. These materials must all be brought home, and in the case of the sumac, the bark must be peeled off and the stem itself split into thin strips. That portion of the material which is to be dyed is especially treated—buried in mud, perhaps—by a process occupying sometimes many days or weeks, which need not here be gone into as I am

not writing a technical treatise on basket making. Then, when all is ready, old Dolores at her wickiup and old Marta at hers, gather their material about them, and sitting on the ground in the shade of their airy *ramadas,* if the day be hot, or in the warm sunshine if it be cold, proceed to build up a basket apiece. Each little wisp of grass that forms the basis of a coil is wrapped closely with its strip of *juncus* or *rhus,* as many as twelve wrappings to an inch, and from fifty to seventy-five coils to the basket. Each coil is fastened tight to the one beneath by pushing a wrapping-end through with an awl; and as the work progresses the weaver's mind is busy with the design which she will work in with the dyed material on the ground beside her. "Shall I make a diamond-square here?" she thinks, "or will it look better without? Shall I do this or shall I do that?" In this way, as momentary fancy dictates, rather than from any preconceived idea of weaving a story, does the California desert Indian of to-day seem to work; though the designs are often conventional symbols of natural phenomena, received by daughter from mother and grandmother, out of a remote past. The basket making goes on in intervals of other labor—the cooking, the care of the children and so on—and is laid down and taken up perhaps a hundred times until finished.

So you see it takes some botanical knowledge besides a deal of time and skill and patience, to produce even a small basket. It is no ignoramus's work, but an artist's; and if conscientiously done, it seems well worth the price a basket brings, which in most cases, all counted, is at a lower rate than we pay the man who mows our lawn or carries out our ashes.

VII

THE SEQUOIA AND ITS ADVENTURES IN SEARCH OF A NAME

LYING on my desk are two little cones, which I like to show my guests as examples of the old adage that the best goods often come in the smallest packages. One is the size of a thimble, the other little larger than a pigeon's egg, and they are the seed cradles of those monarchs among trees, the two species of Sequoia. It is a unique feature of the California forests that in them this remarkable tree genus, which once covered large areas not only of America but of the world at large, is making its last stand. Fossil remains of former geologic ages show that trees of this tribe formed forests that girdled the earth north of the Arctic Circle and extended down into Europe; and it has been thought that the remarkable petrified forests of Arizona were largely made up of a species of Sequoia. At the present day two vigorous species are found in California and none anywhere else, if we except a small area at the northern border where one spills over for a few miles into Oregon.

Of these species, that known in scientific parlance as *Sequoia sempervirens,* is the redwood of every day speech. It forms more or less pure forests along the coast from the neighborhood of Monterey to the Oregon line, constituting a belt about 450 miles long, whose width is determined by the reach of the fogs that drift inland from the Pacific; for fogs are the life blood of the redwood forests. Never-to-be-forgotten forests they are, to any who has ever traversed the glorious stretches of one, now drenched and misty with fog, now shot through with descending shafts of light filtering down from the high leafy roof that even hides the sun. Here the wild oxalis of the Coast spreads its fat leafage by day and folds it by night, and opens to the passer-by rare bells of pink loveliness; here the wild ginger sheds its spicy fragrance, its strange, spidery blossoms recumbent on the mold about it; and here the California huckleberry,—as famous for its decorative red stems fringed with shiny little evergreen leaves extensively used in urban decoration, as for its juicy fruit—flings its luxuriant branches hither and yon, to the length of six or eight feet. Here, too, grow lovely yellow violets of three or four species—blue violets are rather scarce in California, but some of the yellow species have a couple of petals dashed with purple or brown, pansy-like.

Everywhere, nestling at the redwoods' feet, are clumps of the graceful *Polystichum munitum,* or swordfern, which tourists often mistake for its eastern cousin the Christmas fern; while over all is the hush of the forest, broken only by the twitter of birds and the tapping of the wood-pecker—the carpenter, the Spanish call him—boring holes in the tree-trunks to store acorns in, which it is an even chance the rascally squirrels will steal. Douglas, in his reports, speaks enthusiastically of the redwood as the especial beauty of California vegetation, giving "the mountains a most peculiar—I was going to say, awful—appearance; something that plainly tells us that we are not in Europe."

It was *Sequoia sempervirens* that attracted the notice of the first Spanish expedition by land in California, as has been told in another chapter, when in 1769 the explorers were in search of the harbor of Monterey; but the first trained botanical observer to detect the tree and note its features in a scientific way, was Thaddeus Haenke, with Malaspina's ships when they touched at Monterey in 1791. A year later Menzies collected specimens of it at Santa Cruz, and it was from these that the English botanist Lambert gave to the world in 1828 the first technical description of the tree. He believed it to be a Taxodium or cypress—a genus to which the bald

cypress of the Florida swamps belongs. Because the California tree was evergreen of leaf, Lambert named it Taxodium sempervirens, meaning the ever-verdant cypress. This specific designation was really more appropriate than its namer knew, for the wood of the Sequoia is about as nearly indestructible as it is possible for wood to be. Unlike other coniferous trees, the amount of resin which it contains is negligible, in fact almost nil; so that the trees are very slow to ignite and equally slow to burn. They are also remarkably long-lived and free from the insect depredations and fungous diseases which are the bane of most arboreal life; and in the case of the species known as redwood, it frequently happens that when one tree is cut down, a score of new trees spring into being from buds of the spreading root system—there is no tap root—thus forming the so-called "redwood circles," familiar to every one who knows the tranquil aisles of a redwood forest. Even after fire has swept a redwood forest, the blackened trunks will often reclothe themselves with living green.

The value of the redwood as timber is so enormous that Dr. W. L. Jepson, whose sumptuous work, "The Silva of California," should be consulted by every one interested in the native woods of the State, has well said: "California might have

spared her gold mines but not the resources of the redwood belt.'' It is from this wood in conjunction with that of the Douglas fir (*Pseudotsuga Douglasii*)—the Oregon pine of the lumberman—that the timber bungalows which are so characteristic a feature of modern California, are constructed—the Douglas fir supplying the frame-work and much of the interior finish, and the redwood being used for the walls and such parts as touch the earth. The redwood is exceedingly slow to rot, and posts of this material sunk in the ground have been found still good after a generation, although this extent of durability is not to be depended upon in all cases. The timber is remarkable for its straightness of grain, and lightness of weight. Curiously enough, its value for building was slow to be realized, and the American pioneers, thinking the softness of the wood made it unsuitable for building, not infrequently imported timber at great expense from the East, bringing it around the Horn in sailing vessels. The traveler of to-day in out-of-the-way places in California, may still see houses of timber which made this long voyage, more than half a century ago.

In matter of height the redwood in its best development would appear to exceed any other of our native trees, and specimens measuring 340 feet, ac-

cording to Dr. Jepson, are recorded, though the average height is probably not much over 200 feet. The enormous trees that are situated in the famous grove near Felton a few miles from Santa Cruz on the railway line to San Francisco, and are visited annually by thousands of tourists who never regret the stop, are redwoods—*Sequoia sempervirens*—although they are locally known as Big Trees. What is ordinarily called the Big Tree, however, is the redwood's first cousin, *Sequoia gigantea,* the second species of this remarkable, aristocratic genus. It is found in isolated groves only on the western slope of the Sierra Nevada, at an elevation of 5,000 to 8,000 feet throughout a range of about 250 miles, extending from Placer to Tulare County. The average height of living specimens is about 275 feet, and the diameter about 20 feet, a yard from the base. The maximum height given by Dr. Jepson, is 325 feet,[1] or a trifle less than the tallest specimens of the redwood, but taken as a class the Big Trees are the larger, both as to height and girth. Their huge trunks, sometimes thirty feet in diameter at the butt, enveloped in bark a foot to a foot and a half thick, rise a clean hundred to two hundred feet to the branches, and their groves are among the most

[1] This is in the Calaveras Grove. Mr. E. H. Wilson of the Arnold Arboretum, gives an estimated greater height to certain fallen trees —one possibly 425 feet.

humbling of nature's marvels to men not entirely swamped in self-conceit. The ruthless iconoclasm, however, that lays its hands on the world's most cherished traditions has not overlooked the reputed great age of the Sequoias, and some latter-day students of the matter are inclined to put the maximum age of the Big Tree at only 2,500 years, instead of double that as has been generally asserted. To the lover of sentiment whose heart is lifted up in spontaneous worship in the hushed twilight of a grove of mammoth Sequoias, as in a temple of the Lord that was standing when Christ walked in Galilee—a temple whose veil was never rent—it is a solace to consider that even at this reduced estimate, the venerable giants antedate the Christian era by the age of an oak or two. As a matter of fact, the riddle of their age is still unsolved and the estimates of four or five thousand years, while they may be questioned by the skeptical, have by no means been disproved. Guesses at tree ages, based upon ring-counting, are looked upon now as less certain than formerly, because of the probability that under certain circumstances more than one ring may be formed in a year.

The groves of Big Trees that are most visited, are an easily accessible scant half-dozen in the northern range, and particularly those in the neigh-

borhood of the Yosemite Valley. By far the most numerous tracts, however, are found to the south in the basins of the King's, Kaweah, Tule and Kern Rivers, in a region of wild and glorious scenery, to which a principal gateway is the town of Visalia in Tulare County. Big Tree timber is very similar to redwood, though of greater brittleness—the huge trees in falling are sometimes shattered into useless fragments, splinters and dust—and for a generation extensive lumbering operations have been carried on among the groves. Fortunately, public interest in the trees for their own sake has led to the putting of considerable groves under Government ownership, as in the Yosemite, Sequoia and General Grant National Parks, so ensuring their preservation. Even where the groves are being lumbered, obliteration does not necessarily follow, as the tree reproduces rather freely from seed, and young saplings are met with even in areas where fires of previous years have wrought havoc.

Neither has the protection of the redwood been quite neglected, and near Santa Cruz and San Francisco there are reserves set aside forever for public enjoyment.[2]

[2] A State reserve of 3,800 acres (of which 2,500 are timbered) near Boulder Creek, Santa Cruz County; and the Muir Woods, 295 acres on the slope of Mount Tamalpais, Marin County—the latter reserve given by Mr. William Kent to the nation.

The first white man to see the Big Trees and appreciate their grandeur, was probably General John Bidwell, a famous character in the American history of California, whose Rancho Chico, near Sacramento, is among the best known in the State. Bidwell, then a young man, crossed the Sierra Nevada with a party of emigrants in 1841, bound for Sutter's Fort on the Sacramento River. It was a cruel passage through snow and brush and rocky wilderness, but with it all Bidwell managed to notice some trees of dimensions nothing less than colossal. As he and his half starved companions were at the time particularly interested in dodging Indians and finding the shortest cut to civilization, he could not stop to make observations of a scientific nature, but the memory of those arboreal giants remained with him. Two or three years later, when Colonel Fremont stopped at Sutter's on his way south, Bidwell told him of these remarkable trees; but Fremont, doubtless hardened by other "tall stories," gave this no heed; so it was reserved to others to spread the news. In 1852, if we are to accept the statement of another California pioneer, James M. Hutchings—whose book "In the Heart of the Sierras" abounds in reminiscences of the Central California mountains in the days of the early American occupation—a hunter by the name of A. T. Dowd accidentally

found himself in what is now called the Calaveras Grove. The story which he brought back to camp regarding the mammoth plantation seemed to his comrades to out-munchhausen Münchhausen, and they would not believe it, although Dowd offered to guide them to the place to see for themselves. The discoverer, however, knew he was the hero of a real romance, and not to be cheated of his rightful glory he resorted to stratagem. One day when he and the rest were hunting in company, he managed to steer them without notice into the presence of the trees, and the giants spoke for themselves. Their fame then spread rapidly and specimens of cones and foliage were despatched to Doctors Gray and Torrey in the East, for a botanical opinion.

This material, unfortunately, was lost on the voyage around the Horn; but in the following year, 1853, a British botanist, William Lobb, collecting plants and seeds for an English firm of nurserymen, visited the Calaveras grove and secured specimens which he forwarded to England with better success; and Sequoias started from Lobb's seeds are growing in Great Britain to-day. Dr. Lindley, a botanist of London, after a study of Lobb's material, described the tree as a new genus under the name of *Wellingtonia gigantea,* in honor of the Iron Duke whose recent death made his memory then

very fresh in the public mind. Subsequent examination convinced the French botanist Decaisne that the tree was not a new genus but merely a second species of redwood, which by that time had been transferred from the taxodiums and established as a genus in its own right, called Sequoia. Decaisne accordingly named this Big Tree, on account of its gigantic proportions, *Sequoia gigantea.*

Meantime, back in California, Dr. C. E. Winslow, a naturalist of local fame, was making a visit to the Calaveras grove. Consumed with national pride in America's possession of these biggest of big trees, the good doctor considered it a national disgrace that they should bear an Englishman's name, and proceeded to make the American eagle scream in a letter dated August 8, 1854, and written in the shade of the Big Trees themselves. He despatched the letter to a weekly paper called "The California Farmer," in which it was printed. After describing in popular style the characteristics of the species, he claimed for it as its only proper designation, the name of America's most distinguished son, George Washington. "If the big tree be a taxodium, let it be called *Taxodium Washingtonianum,*" he perorates; "if it be properly ranked a new genus, let it be called until the end of time, *Washingtonia Californica!*"

This letter has given botanists a lot of trouble to decide what, in justice, the Big Tree should be called in scientific terms. The law of priority requires that the name given by the first correct describer of a plant should be accepted, unless that name has already been used in describing another. Unfortunately, it seems that the name *Sequoia gigantea* had once been proposed for the redwood. This fact had the effect among nomenclatural sticklers of discrediting the same name when given by Decaisne to the Big Tree, although in the meantime the redwood had come to be called *Sequoia sempervirens.* As a consequence, in the view of orthodoxy, and in accordance with a description published in 1855 by one Seeman, the tree should be *Sequoia Wellingtonia;* and so it is called in Sargent's authoritative "Silva of North America."

Dr. Winslow's letter, however, proposing *Washingtonia Californica,* antedates Seeman by a year; and had his description been couched in technical language and published in a botanical journal, instead of being merely a contribution to a country newspaper, it would have had an unquestioned standing at court, which it now lacks. Nevertheless, Winslow has some friends, among them the dendrologist, G. B. Sudworth, author of a work on the "Trees of the Pacific Coast," published by the

United States Government. In it the Big Tree is called *Sequoia Washingtoniana.* It is a humiliating fact that this noblest of California trees is really without a universally accepted name among the scientists of the world. Those who place the spirit before the letter are content still to call it *Sequoia gigantea,* as Dr. Jepson does in his "Silva of California"; while the adherents of the letter of the law continue at loggerheads between *Sequoia Wellingtonia* and *Sequoia Washingtoniana.* Meantime, the unlearned, who so often put a touch of poetry into the common names of plants, have been singularly barren of fancy in the naming of this most inspiring of native growths, and prosily call it just Big Tree.

Of all the Big Tree groves the one with perhaps the most of human history connected with it, is that Calaveras grove which Dowd discovered, near the north fork of the Stanislaus River in Calaveras County. It is privately owned and consists of about a hundred trees, and a hotel and post office near by enable travelers to visit it without leaving civilization behind them. Very soon after the discovery, the bark—nearly a foot and a half thick—was stripped from one tree for a distance of thirty feet from the ground, and exhibited in many places as a curiosity, a part being eventually transported to

England, where a room was built of it at the famous Crystal Palace Exhibition. The girdling of the tree having caused it to die, it was decided to fell it and manufacture souvenirs of the wood. The tree was thirty feet through at the base, and upwards of three hundred feet high, and to cut down such an arboreal giant with axes seemed impracticable, so a plan was conceived to bore it down with pump augurs. This proceeding occupied five men twenty days. Even then the work was not completed, for so squarely did the dissevered trunk rest upon the stump that it refused to fall, and two more days were consumed in inserting wedges to break up the equilibrium. Then Nature took pity on man and one noon, while the workmen were at dinner, a gust of wind caught the crown and brought the forest mammoth crashing and roaring to the ground with a force that caused the earth to tremble as from an earthquake. A count of the rings showed an age of about 1,300 years. The fallen log was smoothed on the upper side and upon it a ten-pin alley, eighty-one feet long, and a barroom were constructed. Upon the stump, which measured twenty-five feet across, a pavilion was erected, and for a time religious services were held there on Sundays. On weekdays it was used as a dancing floor, and I believe still so serves, though the absence of "spring"

makes dancing on it rather tiresome. Theatrical performances and concerts have also been often given upon this unique stage, and in 1858 a newspaper entitled "The Big Tree Bulletin," was for a time published in the pavilion.

VIII

A CHAT ABOUT CALIFORNIA FERNS

IT is somewhat disappointing to the plant lover in California to find the fern flora so meager. Throughout the length and breadth of this empire of a State, sweeping as it does from the sea's level upward through every sort of climate to alpine heights of fourteen thousand feet, and magnificently rich in flowering plants, there are but half a hundred species of ferns. Of this number fifteen are denizens only of high mountain fastnesses or arid deserts—strange habitat, this last, for a fern—and are thus outside the track of the ordinary traveler. As many more are so very rare as to be prizes in the sight of the oldest botanists. This leaves about twenty species all told that the casual collector is likely to come upon, and of these a round dozen includes all that may be termed at all common in territory known to the average traveler.

The reason of this paucity lies in the fact that ferns are a distinctively tropical family, and for their best development require a great deal of mois-

ture combined with steady warmth. California as a whole, is dry rather than moist, and the temperature runs a scale of anywhere from twenty to forty degrees every day in the year, between dawn and midnight. It is not surprising, then, that of all the ferns which thrive in the relatively wet and equable conditions of the Eastern summer, there are but a scant half-dozen that find California's chilly nights and low midday humidity at all tolerable. Moreover these are by no means frequent. They are the common polypody (*Polypodium vulgare*), which may be found along the northern coast, often rooted in the damp crevices of the bark of tree trunks; the five-fingered maidenhair (*Adiantum pedatum*) which occurs here and there in the Sierra Nevada and in the Coast Ranges of Northern California; the true maidenhair of the Old World and the Atlantic South (*Adiantum Capillus-Veneris*), which occasionally finds wet, shady rocks in Southern California to its taste; the lady-fern (*Asplenium Filix-fœmina*), in mountain bogs; and two woodsias of the High Sierra, which occur also as far east as the Mississippi basin. A number of common favorites of the East, such as the several osmundas, the sensitive fern, the walking leaf and the sweet-scented dicksonia of mountain pastures, are entirely wanting on the Pacific coast.

There is a familiar bracken which makes a luxuriant, weedy growth in the sunny forests of much of California, and spreads itself like an angel of healing over areas that forest fires have blasted. It grows sometimes, notably in the north, to the height of six or eight feet and takes such complete possession of the ground as to put a bar to progress even on horseback. While to the non-scientific, it seems the same bracken as luxuriates in hillside thickets and dry fields throughout the East as well as in Europe—the bracken of literature, of Tennyson and Sir Walter—it is really a distinct variety, possessing a marked downiness of the fronds, which acts, doubtless, to retard evaporation in the dry atmosphere of its far western home. Botanists call it *Pteris aquilina lanuginosa*—the downy brake. The roots had some food value in the view of the Sierra Indians, and in Northern California they are used to some extent in coarse basket work; while the large leathery fronds, according to Chesnut, serve excellently in Indian hands for beating down grass fires.

The tallness of the bracken is rivaled by only one other California fern, the noble *Woodwardia radicans,* which in situations to its liking, as in the depths of moist, shaded cañons and in places where springs issue, grows in tropical luxuriance. It is a confirmed *buveur d' eau,* and is always found with

its feet in the water, its great clustered fronds rising in stately fountains of verdure that frequently exceed in height the stature of the tallest man. To those uninitiated in the ways of ferns it may be said that instead of flowers followed by true seeds, ferns bear upon the backs or margins of their fronds and usually hidden away from sight, small collections of minute dust-like particles called spores, which perform the office of seeds to reproduce the plant. In the old days when the doctrine of signatures was held as religiously by the learned as the germ theory is to-day, the belief prevailed that ferns had seed but that these were ordinarily invisible; if found, however, they would transfer to the finder their power of invisibility. Saint John's Eve, the great midsummer festival of medieval Europe, when fairies were abroad and the air was ripe for magic rites, was a favorite time for the quest of fern seed, and the folk lore of the Old World is full of reference to it. Shakespeare, for instance, in "King Henry IV," makes Gadshill say in the scene at the innyard at Rochester, "We have the receipt of fern-seed, we walk invisible."

In our matter-of-fact time, we may find "fern-seed" almost any day of the year, by turning back a frond and examining the under side through a pocket lens. We are given thus a glimpse into an

unsuspected world, which all our lives hitherto, we have heedlessly passed by. Here beneath our square inch of magnification, veins and veinlets run in rare lines of beauty and fork like highways of travel pressed often by microscopic animalcule feet on business of as great import to their owners as to us is the buying of a government bond or the placing of a mortgage. Sometimes these fairy lanes traverse smooth, green plains with just enough inequality to add zest to the exercise; at other times the going is rough with chaffy scales that strew the way like jagged brown rocks. Often there are forests of hairs that rise under the glass like tree-trunks, and chaparral of low-lying woolliness. In such varied territory the communities of tiny spores are set. At times we find them flat on the leaf surface in little naked heaps; again pocketed at points along the edge, where the reflexed margin covers them over as with a flap. Often they are in lines straight or curved, single or double, snugly tucked away under a membranous blanket; again they are gathered beneath the protection of round umbrella-like covers upon which, from our skyey height, we look down as upon the roof of some precisely conventional town where every house is like the others and all are placed at equal distances on each side of one long avenue. As the arrangement of the

spores upon the frond varies so widely among the different kinds of ferns but is constant in each sort, a natural basis for the classification of the order is thus provided which science long since adopted. In the case of the woodwardias, the spore clusters, which are longish and narrow, are sunk in cavities on the under surface of the leaflets and form interrupted rows which suggest so many little chains. These furnish a ready means for identifying the ferns of this genus, and for this reason, they are sometimes called chain ferns.

The common five-fingered maidenhair (*Adiantum pedatum*), the collection of which is a stock pleasure with young folk of all ages back East when they go picnicking, grows to the height sometimes of two feet in the moist Coast Ranges of the north, and its glossy black stems are worked by the Indian women into some weaves of baskets, contributing strikingly to the beauty of the design. More frequently met with in California, is another maidenhair never found wild in the East, *Adiantum emarginatum*. It is easily recognized as a maidenhair by the beautifully polished, black stipes and roundish leaflets, but the fronds are without the characteristic forking habit of the species that Easterners best know. Mr. Chestnut records that among the Mendocino Indians, the stems, which as in the

commoner species are smooth and black, used to be particularly valued for keeping ear-ring holes open and for increasing their size. On this account the fern bears a name among those aborigines which means "ear-stick tree." It is the characteristic Pacific Coast maidenhair, and in California is found throughout the length of the State. It loves the cool dampness of shady banks in cañons, and clusters about the bases of rocks in mountain woods principally near the coast and always at low altitudes; but it is something of an adventurer, too, occasionally exploring the brushy recesses of hillside chaparral that once were moist, and has been found even in the desert region in locations where shade and some moisture obtain.

The discovery of certain ferns happily living along in the desert's rocky wastes is one of the surprises that await the plant lover in California; but so far as my own observation goes, such ferns all like their bit of shade, diving into the darkling crevices of boulders or burrowing about the edges where rock meets earth. In such situations, furthermore, they get what dampness there may be lingering after the scant rainfall of the winter is over and gone. The typical desert species of my meeting are two cloak-ferns (*Notholaena Parryi* and *N. cretacea*), and the sticky lip-fern (*Cheilanthes vis-*

cida). They are small plants, a few inches high, growing in bunches as though in union there were strength to resist the assaults of the desert droughtiness, and after the manner of desert plants they have put on special armor for the occasion. In the case of *Notholaena Parryi,* this consists of a tangle of white hairs covering the upper side of the leaflets, and a denser brown tangle of woolliness covering the surface beneath. The other two species prefer powder and sticky glands. All these equipments serve the same purpose of reducing the evaporation of the plant's small stock of hard-gathered moisture in that land of little rain. There is another Notholaena which the rambler among the foot hills of Southern California, is pretty sure to encounter growing in the crevices of dry shady boulders, and popularly known as the cotton-fern. Its clustered fronds, which are four or five inches long, with blackish stipes of about the same length, are thickly covered above and below with cottony white hairs, which are a marked characteristic of the species, and have given rise to the common name.

At the desert's edge grows one of the rarest ferns in the world, unknown to science until 1881 when it was discovered by Mr. S. B. Parish in Andreas Cañon, a gorge in the eastern steeps of Mount San Jacinto opening to the Colorado Desert, near Palm

Springs. A rough, rocky trail leads from the desert into this cañon, anything but pleasant traveling to the footman who struggles along it plucked at by cat's-claw acacia, stabbed by cactus spines and startled now and then by the sudden springing of some equally frightened rattlesnake's insistent clatter close to his feet. Conditions improve, however, after the cañon is well entered, and at about two miles from the mouth you reach a narrowing gorge, where a single *Washingtonia* palm makes a landmark known to every frequenter of the region. It was just above this gorge, on the left bank of the stream which there flows musically in a brushy thicket, that Mr. Parish one March day picked a few specimens of a fern that no one had ever gathered before, and it was subsequently named in his honor, *Cheilanthes Parishii.* In those days, a generation ago, when California was still a good deal of a *terra incognita,* there was nothing very remarkable in turning up an undescribed plant or two; but the noteworthy thing about the finding of that little fern is that for twenty-seven years afterwards, nobody, not even the discoverer himself who visited the identical spot a year later, could find another specimen, either in Andreas cañon or anywhere else. The quest for *Cheilanthes Parishii* became as baffling as the search for the lost mines

that are the will-o'-the-wisps of desert prospectors. In March 1908, however, the present writer, camping with his wife in the same cañon just below the gorge of the Lone Palm and having no thought of this fern of whose history he was then ignorant, climbed one day down a dim trail to the stream for a canteen of water. As he climbed back again he plucked from a crevice in a rock, in passing, a few fronds of a solitary fern plant that struck him as something strange. Subsequent examination proved the plant to be the long-sought *Cheilanthes Parishii!* But the old fatality still clings to it. Though I visited the place again and searched the cañon side over and over, no faintest sign of this elusive fern could be found. To discover it seems to be reserved to but one man at a time and but once in his lifetime. Who the next will be, having a receipt for this fern's seed, *quien sabe?*

The genus *Cheilanthes,* sparingly represented in the East, is a somewhat common one in California where ten species, all distinct from the eastern, have been reported. Of these there are two, *Cheilanthes fibrillosa* and *C. amœna,* even rarer than *Cheilanthes Parishii,* for each has been collected but once. In this genus the spore cases form about the margin of the leaflets roundish dots which are covered by the turning back of the lobes or their segments,

like so many lips, for which reason the plant is often called lip-fern, a loose translation of its Greek botanical name. In many species the spore-bearing segments are rolled up like tiny green beads which form, when present, a striking character by which to identify ferns of this genus. A very charming member of this family, not uncommon in the coast mountains particularly in the South, is that popularly known as lace fern (*Cheilanthes Californica*). It is a delicate little plant, whose finely divided leafage is well described by the common name, and there is none that is more eagerly sought by plant-collecting amateurs in their mountain outings. It is to be looked for in crevices of shady rocks or about the bases of cliffs in mountain woodlands.

Many ferns occurring on the Pacific Coast from the vicinity of San Francisco northward, were made known to the world through the collections of that Adalbert von Chamisso, to whom we owe the discovery of the California poppy. Among these is one that is known and loved by everybody who has rambled and day-dreamed in the California redwood forests, and which goes popularly by the name of sword fern. It belongs to a tribe that has been for many years a battle ground with botanical nomenclaturists, and it is variously listed in the books as *Aspidium munitum, Dryopteris munita,* and *Poly-*

stichum munitum. It is for the reader to take his choice. The resemblance of the plant to the well-known Christmas fern (*Aspidium acrostichoides*), of the East, used extensively by florists there for winter greenery, makes it easily recognizable. It has a marked preference for slopes to grow on, and it is on stony mountain sides under the shadow of oaks or conifers, at altitudes up to five thousand feet, that one usually comes upon it. In the redwood forests, when it finds itself in some nook where a happy combination of moisture, shade and soil makes an ideal dwelling place for it, it has been reported to attain a height of five feet. That is exceptional, however; more often, the fronds do not exceed two or three feet including the stipe. Professor Daniel C. Eaton, author of "Ferns of North America," has suggested as a common name "Chamisso's Shield-fern," in commemoration of its discoverer, which, if common names came by expert suggestion, would be a very sensible one. Shield-fern is because of the round, shield-like covering that protects the spore dots, and which any one can see by turning over the tip of a frond. Frequently associated with Chamisso's Shield-fern is another, *Aspidium rigidum argutum,* the fronds thinner in texture and rather triangular in outline. In the home remedies of the Spanish-Californians,

this fern had an important place, and was called *la yerba del golpe*—"the herb of the blow." According to Ida M. Blochman, who recorded in *Erythea* some twenty years ago many interesting uses of native plants among the Californians, a decoction was made from the roots, and applied warm to bruises, to relieve pain and reduce discoloration.

Quite as common is another of von Chamisso's discoveries, the California polypody (*Polypodium Californicum*)—a brighter, rather larger and distinctly more papery species than the cosmopolitan *Polypodium vulgare* which is the common polypody of the East. The Californian is a graceful, handsome fern, particularly upon its fresh uncoiling in the woods of the early year. It is less abundant in the north than in the south, and even extends into Lower California. Chesnut found it clothing mossy logs and banks in deep cañons of Mendocino County, where the Indians used its root medicinally, bruising it and applying it to the body for the healing of sores and for rheumatism. An extract of the root was also used for sore eyes.[1] In the mythology of

[1] Do you smile at the Indian simplicity? Our own enlightened race in former times had a fancy to make medicine of ferns. The roots of *Polypodium vulgare* had once a great vogue among the doctors from the day of Dioscorides to quite recent years, being administered for a variety of complaints, dropsy, melancholia, taenia, asthma and what not, as the fashion in medicine changed; and there are doubtless people still living, who remember the undisputed re-

the Wailaki—one of the tribes of that region—this fern, the same authority states, plays a pleasant part. Its fronds are deeply divided into finger-like lobes, and the coyote, which all Indians regard as the shrewdest of animals, did not fail to observe this peculiarity, and with an inventive genius worthy of New England, to turn it to account. Running in and out and upward along the fingers, he made use of the frond as a counter to teach the elements of arithmetic to the little coyotes! Either coyotes were smaller in that primeval day or ferns larger, for a polypody a foot high is nowadays esteemed a large specimen.

Two wiry ferns, both peculiar to California, that are among the first which the amateur discovers, are the so-called coffee fern and the bird-foot fern. The march of civilization seems to have disturbed these wildings rather less than most native ferns, and one finds them on every sunny, rocky slope and in sandy washes, hiding in the shelter of bushes or any tangle of miscellaneous shrubby growth. They enjoy a little shade but not too much. Like the desert species already referred to, they have learned the pleasures of a dessicated life, and as the dry season progresses, their little skins become as tough

medial virtues of capillaire, a syrup prepared from the juice of maidenhair fern fronds.

and hardened as that of any human rancher or "desert rat." The coffee fern, indeed, where shade is scarce, takes on a reddish hue, as though sunburned. Both are species of the genus which botanists call *Pellaea,* and may be identified by the manner in which their spore cases form a more or less confluent line along the edge of the frond divisions, like a raised binding cord. The fronds are many times divided. The leaflets in the case of the coffee-fern (*Pellaea andromedaefolia*), are about the size and shape of a flattened grain of coffee, the fancied resemblance to which, particularly in the brown days of summer, has given rise to the common name. In the bird-foot fern (*Pellaea ornithopus*), the ultimate divisions are small and sharp-pointed, arranged curiously upon the stem in pairs of three each, that form such a striking resemblance to the three spreading toes of tiny birds' feet, that it was not in human nature to resist dubbing the fern by the common name it bears in witness of that marked peculiarity.

But after all, the fern which is nearest to most Californians' hearts is the famous gold-back fern—the *Gymnogramme triangularis* of the botanists. It, too, is one of von Chamisso's discoveries on the famous voyage of the *Rurik,* and is a common fern from the southern tip of the Lower California

peninsula to British Columbia. The fronds are rather leathery in texture, triangular in outline, and produced at the tip of clumps of chestnut-brown, glossy stipes, and are remarkable for the golden dust which abundantly covers the underside of the fronds. Of all the filical fellowship, the gold-back is the children's fern, taking its place in the list of childhood favorites along with such cherished flowers, for instance, as the buttercup, unfailing test of butter loving, and the daisy the census of whose rays reveals your infantile loves. The reason of the gold-fern's popularity is this: you break off a frond and press it firmly and evenly against your trousers' leg or your sister's white waist, and there, upon removing it, is the golden imprint of the fern decorating that piece of clothing. Could any pastime be more fascinating? In some cases the powder is white instead of yellow, and that form is popularly distinguished by the name of silverback. Botanists, however, find no essential difference between the two sorts. The powder is an exudation doubtless designed to help the plant to exist under the dryish conditions which it seems to enjoy—or which at any rate it has to endure—for sometimes it is found growing at the desert's edge. With the advent of the dry season, the fronds roll themselves up into little yellow and white fists, the powdered

surface being always turned outward. In such discreet fashion, exposing as little of themselves as may be, they weather it out until the rains come again, when they expand and freshen up in the descending drops with that cheerfulness and irrepressible enjoyment of the wet that only dwellers in a dry land can know.

For descriptions of the California ferns in the exact language of science, readers are referred to "Our Native Ferns and Their Allies," by Lucien M. Underwood. An interesting paper entitled "The Fern Flora of California," by S. B. Parish, printed in *The Fern Bulletin* for January, 1904, gives a complete list of species with their distribution in the State. Hall's "A Yosemite Flora" contains descriptions and illustrations of many of the Sierra ferns.

IX

GARDENS OF THE SPANISH-CALIFORNIANS

SHE was a pleasant-looking little old lady, her withered cheeks aglow from exercise, as she dug energetically in a sunny bed of gilly flowers one spring morning, and I could not forbear stopping to have a chat with her about them. In fact I had been told at the hotel of the little half-Spanish village that if I wanted to know anything about the old time California flowers, Doña Margarita was the one to tell me.

At Doña Margarita's

"She was born when California was still a Mexican province," mine host at the inn had said, "and has lived here all her life. She is none of your Sonoreñas [Mexican peons from Sonora] but real Spanish on both sides of the house. There are a few such still in the State, not of the Castilian *sangre azul* the newspaper writers are fond of attributing to them, but more honest, I guess—descended from sturdy peasant stock who went for soldiers and

sailors, and some of whom for their service to the Spanish king were paid off a century or so ago in grants of land. Why, Doña Margarita's father, old Don Miguel, owned three leagues square on the outskirts of Los Angeles, and if he could have held on to it her family would have been millionaires; but, Lord, it all went long ago for interest and taxes, and to-day the old lady only owns her adobe and a few sticks of furniture."

After a little preliminary shyness and indisposition to talk anything but Spanish, which I understood but imperfectly and spoke worse, Doña Margarita's innate hospitality took command of her and she dropped into English and cordially invited me in. It was an unkempt bit of garden, without grace of arrangement, but amazingly full of flowers reminiscent of the olden time.

"Yes, señor," said the little old lady, "it is always *las flores de ántes*—the old time flowers—that grow best for me; the new kind, I don't know why, but they do not grow. Now this"—and we stopped before a robust rose bush, rather coarse of leaf, bearing tousled pink blooms that were very fragrant, such an old, old-fashioned rose as modern gardens with their dapper French aristocrats would not tolerate—"now this is the Castilian rose, *la rosa de Castilla.* In old times this was the most

favorite of roses, and was in all gardens. Sometimes it bloomed white, too; and in winter, when the weather was mild, it would bloom again—and so sweet to smell. This was the rose that was planted in all gardens when I was a little girl; and when the Americans found out how good a land is California to live in and came and settled they found it blooming everywhere—*la rosa de Castilla.* And it was good for medicine, too. We made a wash from it for bad eyes, and a salve for the hands when the skin was sore."[1]

"And my gillyflowers—you like them? All the old gardens had them—*alelilla,* we call them. And the *malvas*"—so she called the geraniums. Did you ever notice how like mallow leaves their foliage is? and *malva* means mallow. "There are many *malvas.* There is *malva luisa.* Then there is *malva real,* a little tree, like. And this pretty bush is another, *malva rosa.*"

It was a twisted little shrub with maple-like leaves and flowers suggesting single red roses. Once I had seen it growing wild on Santa Catalina Island and knew it as *Lavatera assurgentiflora.* It

[1] Through the kindness of Professor C. S. Sargent, to whom a specimen of this rose was sent, it has been identified as *Rosa gallica,* a species of many forms cultivated in Europe for centuries. It is in the same class with the famous Damask rose of our grandmothers' gardens everywhere.

is common in old California gardens, and was formerly extensively planted for windbreaks about the Orientals' market gardens near San Francisco.

"Some say the Franciscan fathers planted the first seeds of *malva rosa* in California, because it grew in Spain and they loved to have in the Mission gardens the plants that reminded them of home, for they must often have been lonesome here in the wilderness, the poor padres. But other people say, no; it did not come from Spain, but from the islands near Santa Barbara and it grows wild there. So I do not know how the truth of it may be; but it is here now and a pretty flower, no?"

And here in our ramble we came to a row of callas unwinding their lovely horns of snowy purity. The Spanish genius for graphic and picturesque nomenclature is strikingly illustrated in the word which Doña Margarita gave me for this coddling of eastern greenhouses, but which often runs wild in California.

"*Corneta,* we call it," she said, "a music horn as you say in English. It is nice flowers, I think, and always the gardens have them to decorate the altar at the church. Often in the ciénagas they grow wild, too, and I mind a place near San Gabriel where they one time grew along a zanja—an irrigation ditch, you know—for the longest distance, just

wild, because they liked the water so well. And here I have other lilies—this is *lirio de Maria,* the lily of the Blessed Virgin. I think you call it Annunciation lily; and these other *lirios* are pretty, too—iris, you say, no? But best of all, I love my *Flor de San José.* You say hollyhock—we say *Flor de San José*—Saint Joseph's flower; or sometimes Saint Joseph's staff—*la Barra de San José*—there's so many words in Spanish!"—and the old lady smiled apologetically for her voluminous language. "Perhaps you are Catholic and know why Saint Joseph's flower? No? Once the padre at the church, he told me why. When it was that a husband should be chosen for the Blessed Virgin, the young men that were of her kindred were sent for, and they came at the set time, each with his staff in his hand, which was the way of travelers in those days; and it was that the man whose staff should break into bloom, should be the husband. And sure enough, Saint Joseph's staff, it budded and beautiful flowers came on it like roses all up and down the stem, just as you see in the hollyhocks, and so we call them *Flores de San José.* They are *de muy ántes*—very, very old. All the gardens had them—even my grandmother's."

By the gate bloomed a white oleander, not in a tub, however, to be taken indoors with the coming

of autumn, but rooted in the ground of this pleasant land where no frost hard enough to kill it comes.

"Laurel," said Doña Margarita, but she pronounced it *low-rel';* and indeed its leaf is laurel-like. "This grew from a tree that was in the garden of the great governor of California, Don Pio Pico. He gave me a cutting."

A bed of poppies—*dormideras,* or sleepers, in Spanish—were wide awake in the sun, hobnobbing with sprawling nasturtiums flaunting in their flowers the yellow and red of old Spain. These the little lady called *mastuerzos,* while her cheerful marigolds which had bloomed steadily through the winter, masqueraded under a name that sounded like *sampasuches.* Her chrysanthemum plants just started into vigorous growth had, in her speech, a more understandable name—*octubres,* or as we should say, Octobers. And there were pinks, *claveles.*

"You know this pretty flower," she said, plucking me a blue larkspur; "to us it is another sort of spur, *espuela de caballero*—the horseman's spur."

And so we came to a little corner where kitchen and medicinal herbs, sweet and bitter, were growing, and Doña Margarita stooped to pass a loving hand across their fragrant tops. Then she smiled,

and Spanish-like broke into a rhyming *dicho,* or proverb of her people:

"*De médico, poeta y loco, todos tenemos un poco.*[2] Here's *romero,* or rosemary you call it, it's good for bruises; and *ajedréa*—that's thyme, no?—to put with chili into the stew; and *yerba buena,* the mint, the good herb that everybody knows; and this with blue-green leaves is *ruda.* You say rue, no? That's so good for ear-ache, my mother taught me to use it. Just warm the leaves on the stove, roll them in cotton and put in the ear. It is a famous cure *de muy ántes*—all the old gardens had it. And this, I don't know how you call it in English? It grows wild in the sierra, but it grows in the garden, too; and we call it *oreja de liebre,* that means rabbit's ear; it's gray and fuzzy like one. It is very good to make a tea from the leaves for a fever, or to bathe bruises."

I recognized the plant as the California goldenrod—*Solidago Californica.* In Linnaeus's day the European goldenrod had great repute as a curative, and because of this he named the genus Solidago, "to make whole." There was a flavor of romance in finding that Old World fame of the plant persisting here in this far corner of the New World.

2 "Of doctor, poet and madman, we all have a little."

After all, the world is one family and as Doña Margarita's wicket clicked behind me, I had the feeling that my own Pennsylvania and Virginia grandmothers would have been quite at home among the tangled posy beds of this daughter of Spanish California.

Old Mission Gardens and Ranch Patios

Doña Margarita's tangled little garden is a type of many in the Spanish sections of California, pleasantly reminiscent of earlier days, like the tumbled garret of an old country house; but because of their informality and modest proportions visible to every passerby, they fail to measure up to the romance with which in our minds old California is invested. We have read "Ramona" and we demand the privacy of the retired garden around which the house has been built; we long for the tinkling of guitars on jasmine wreathed verandas, the splash of water in secluded fountains where orange petals drop in fragrance and the mocker sings through moonlit nights. But alas! there are no birds in last year's nests. With the passing of California under the Stars and Stripes, the old order passed too. One by one, the great Spanish estates came into possession of hardheaded Americans who frankly went in for the money that was in them, and

whose architectural ideals, when they had any, were expressed in the peaked roofs and gingerbread trimmings of the Atlantic side of the Continental Divide. So the old California houses, with their white-washed adobe walls and tile roofs, their cool verandas, and their patio gardens sheltered from public gaze, have rotted gradually away, until now a scant half-dozen, if so many, of the fine old places can be found in anything like their first estate. Those that persist are to be found in the neighborhood of the old pueblo towns—San Diego, Los Angeles, Santa Barbara and Monterey. There are, for instance, in good preservation, the lovely gardens of the Rancho Camulos, midway between Santa Barbara and Los Angeles, in the valley of the Rio Santa Clara del Sur; and those of the Rancho Santa Margarita, a princely domain between Los Angeles and San Diego; while a few miles from this and not far from San Luis Rey, is the Rancho Guajome. At all these the Spanish tradition is still dominant; and they represent the cream of the little that is now left to link us with "the further Past . . . the dying glow of Spanish glory."

The gardens at Camulos are the best known of all, because of the place's association with the novel of "Ramona." In front of the low rambling residence, familiar at least to every tourist who buys

postcards, is the fruit garden given over to orange trees, pomegranates, trellised grapes and doubtless the quinces well beloved of all Spanish-Californians. Behind the house, or rather enclosed within it, is the flower garden—a rectangular patio—one side of which is hedged by a dense wall of Monterey cypress; and the other three fenced in by the house and wings, with broad sheltered verandas facing the flowery enclosure. The noisy world shut out, the blue sky overhead, the air sweet with roses and slumberous with hum of bees, it is a place for dreams and contemplation. In the center is a circular fountain surrounded by a closely trimmed hedge of Monterey cypress, whose well known submissiveness to topiary treatment has been availed of by the gardener, and the rim is clipped into a series of big buttons. At the time of my last visit, the flower beds, though more orderly than Doña Margarita's, were characterized by the same conservative devotion to the favorites of the early days, and an arbor by the kitchen was overrun with an enormous snail vine, its stem as thick as my wrist. The quaint creamy-blue blossoms with their corkscrew twist suggesting a snail-shell, perfumed all the air about the kitchen door. This plant (*Phaseolus Caracalla*) was a common one in all old Spanish-California gardens, under the name of *caracol,* as though it were given to

prancing like a mettlesome steed in a parade! But *caracol,* it seems, only means a snail, and caracoling is but an Anglican exuberance from that slow source.

The gardens *par excellence* of old California were those of the Franciscan Missions before the time of their extinguishing by Mexican secularization some seventy-five or eighty years ago. How lovingly the old-time travelers, starved from long journeys across deserts or by sea, dwelt upon the rare offerings of fruits and vegetables that were gratuitously lavished upon them on arrival at some old Mission! When Don Joseph de Galvez fitted out the famous Holy Expedition of 1769 for the settlement and reduction of Alta California, he packed with the Missionaries' outfit seeds of all useful plants for the establishing of Mission gardens. Accordingly a beginning at horticulture in California was made very promptly upon the founding of the Mission at San Diego in 1769, and subsequently at the other Missions as fast as these were started. It was a slow business, however, in this new land where rain was withheld during six or eight months of the year, to learn what would grow and what would not, and the Missionaries had no recourse but to go to school to man's ancient teacher, experience. Moreover what was found to do at one Mission, might not do at all at another, because of difference of soil or greater

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degree of frost or less rainfall. So during the first few years after the founding of the Missions, the gardens continued unproductive to such a degree that the Padres, in the quaint language of one of them writing to fruitful Mexico, "were like birds seeking a sad living for themselves and their Indians." Before the time of Serra's death, however, in 1784, the gardens at half a dozen of the oldest Missions were producing abundantly. The olive and the grape, the pear, the lime, the orange and the fig were being gathered on land that a few years before had never yielded other harvest than the lean fruits of the wilderness. Even the date had been planted, as is attested by the presence still of a few old trees at San Diego, San Fernando and San Buenaventura. The primary object, however, of cultivating this tree seems not to have been to raise dates, which would rarely if ever mature on the California coast,[3] but the leaves. From the time of Isis worship in Egypt, the leaf of the date palm has been an emblem of victory, and its employment in the Christian festival celebrating the Lord's triumphal entry into Jerusalem, made it desirable for the Missionaries to have the foliage at hand. They might of course have made shift with other green-

[3] Hinds, the naturalist of the "Sulphur" Expedition, which was at San Diego in 1839, speaks of the date palms there yielding only sour fruit.

ery, but they preferred the real thing, if it could be had.

The Mission gardens were in the main utilitarian. Each establishment had, first of all, its plantation of vegetables, its vineyard and its orchard of fruit trees. Vancouver in the narrative of his visit to California in 1792-3 speaks with enthusiasm of the orchards at the Mission of Santa Clara, which included peaches, pears and apricots, and records a famous present of twenty mule-loads of garden stuff received by him from the Missionaries at San Buenaventura. The latter Mission was especially noted for its productive gardens, which the Indians cultivated mainly in the bottom lands of the Ventura River. Vancouver spent a day there in 1793, and has left a glowing account of what he saw. The gardens, he tells us, "far exceeded anything I had before met in these regions—apples, pears, plums, figs, oranges, grapes, peaches and pomegranates, together with the plantain, banana, cocoanut, sugar cane, indigo and a great variety of the necessary and useful kitchen herbs—all these . . . separated from the seaside only by two or three fields of corn that were cultivated within a few yards of the surf." Sir George Simpson of the Hudson's Bay Company, who touched at San Buenaventura in 1841, speaks of the fineness of the gardens even then, which was

seven years after the passage of the Mexican Secularization Act, and includes lemons and tobacco in his list of the products. He, like Vancouver, speaks of cocoanuts; but it may be questioned if both these travelers of the sea were not deceived by the date palms that grew (as still a couple of them grow) close to the sea at Ventura, and might easily be mistaken for cocoanut palms by the non-botanical. In those pre-gringo days, the Missions were the only houses of entertainment that the traveler could count on, and their hospitality was freely accorded to all, for the Franciscan rule forbade the taking of money in payment for favors given. Rich and poor alike were welcomed, but in the case of guests of distinction, special preparations were frequently made, and the curious reader of old journals will come upon accounts of generous repasts served in pleasant weather under arbors in the Mission gardens, followed by games of the Indian neophytes played for the entertainment of the visitors, as they sipped their *pousse-café*.

It is not to be supposed however, that the Missionaries neglected the purely esthetic side of gardening. In spite of the austerity of their monkish way of living, they were—many of them at least—men of tender sensibilities, and were by no means indifferent to the purely beautiful in God's creation.

We remember Padre Crespi's ecstasies over the wild roses, and one may safely wager that roses and lilies followed close upon the heels of frijoles and cabbages in those first Franciscan gardens. Such records as I have had access to, however, are very reticent about flowers—they naturally cut no figure in the official records and reports; and as for personal letters of the Brothers themselves to friends and relatives at home, there is nothing rarer in the archives of California. Father Engelhardt, the official historian of the Franciscans in the State, has commented upon this fact as an evidence of the single-heartedness of their apostolic labor. The character of their flower gardens is nevertheless clearly indicated by the observations of visiting travelers, such as Sir George Simpson, when he stopped for a while at Santa Barbara and marveled at the bloom of jonquils, marigolds, lilies, wallflowers, violets and hollyhocks, even in winter. The blight of Secularization, which began to be felt in 1835, was a deathblow to the Mission gardens small and great, and one by one they returned to the dust that gave them.

In 1839, according to Hinds, the gardens at Mission San Diego had already fallen into decay. In 1846 Fremont reported fertile valleys overgrown with wild mustard, vineyards and orchards neglected and disappearing; but with the rapid influx of im-

migrants into the State after the gold discoveries in 1848, there was an enormous demand for foodstuffs, and the forgotten Mission gardens came to memory again. Investigation showed that some of the hardier sorts of plants—notably the pear, the olive and the grape—were still alive about the old establishments, and by pruning, cultivating and irrigating, could be made to yield anew, and to supply cuttings for propagation. The first fruit offered to the Argonauts in the markets of San Francisco came, it is said, from the furbished-up old pear trees and grape vines of the Bay Missions, Santa Clara and San José.

Of all the trees of the Fathers' setting out remaining to-day, the best known are perhaps a few date palms and certain olives and pears—notably some ancient olives at San Diego, and the century-old pears at Carmel and San Juan Bautista, which are still in bearing. I have an especial fondness, though, for certain shaggy, thorny, little trees that one may still run across, bridging the gulf of time to the Padres' days, at the edge of the old olive yard at Mission San Fernando, though they are in imminent peril of being uprooted in the spread of what the real estate dealers call "improvement." They bear little balls of deep yellow bloom of such a penetrating and delicious perfume, as I know in no other

flowers, and are specimens of *Acacia Farnesiana,* or *juisache*—the *vinorama* of Sonora. In full bloom, as they are in March, their penetrating perfume scents the air with a peculiarly delicious fragrance that one never forgets. The Fathers brought the plant up from Mexico, though it is indigenous also in Texas. It is grown in our Southern States under the misnomer of opoponax, and in Southern Europe as cassie, where it is used by the perfume makers. Its leaves are very sensitive and go to sleep every night. It is one of the plants with which Darwin experimented when making his observations on the sleep of leaves.

The clumps of great, flat-jointed cactus which are still standing in the neighborhood of many of the Missions, possess more than a passing interest. They are of two species, *Opuntia Ficus-Indica* and *O. Tuna,* both introduced by the Padres from Mexico, to which country they are indigenous. They served a double purpose. They formed a quick-growing hedge for gardens and other enclosures, and were also a valuable source of food for the Indians—the cactus fruit, called tuna, being a really delicious morsel when divested of its prickly coat. *Opuntia Ficus-Indica, anglicé* Indian fig, bears a pyriform fruit about the size of a duck's egg and of a pale straw color; *Opuntia Tuna's* fruit is red and

rather smaller. One September day, a year or so ago, I happened to be near the Mission San Gabriel, and noticed an old Mexican man and a little boy making for one of those ancient cactus clumps as if on business bent, and disappear within it. My curiosity was aroused to know what they were after, so I followed. The individual cactus plants were from ten to fifteen feet high, with tree-like trunks, and the whole plantation (which was thirty or forty feet through) was threaded with well trodden paths. On the far side, I came upon my two Mexicans, gathering tunas which were then just ripe. The old man had a pole through the end of which at right angles a nail had been driven. Lifting his stick to the abundant "pears," he speared them one by one and brought them to the ground where the boy brushed the bristles from them and put them in a basket.

The muchacho looked up, and responded pleasantly to my salutation.

"You want to eat?" he said. "*Bueno.* You got knife?"

With that, he quickly brushed a tuna clean of bristles by rolling it over and over on the sandy ground with a bunch of grass; then with my knife he deftly sliced a thin section transversely from each end, and a vertical strip off the rind from end to end. Pressing back the rind from this cut, he released the

cool juicy interior into my expectant fingers. It was exceedingly refreshing on that warm day, in taste very much like a watermelon, and the only criticism I had to make was that it was extravagantly provided with small, bony seeds. These, however, were easily spat out; though the boy, who peeled a tuna too, for his own refreshment, ate his, as I have seen country lads back East eat cherries, stones and all. It was, on the whole, a pleasant experience, and brought me closer to old California days than I had felt before. So, as I parted from my little friend, I thought up my scanty Spanish and gave him my many thanks.

"*Por nada, señor,*" he replied in the pleasant Mexican phrase, "for nothing, sir."

X

ON CERTAIN CALIFORNIA SPECIALTIES AND RARITIES

NOW and then at some California rural resort—tourist hotel or summer mountain-camp—I meet upon the trail a person with perplexed face, a few sprigs of wild flowers, and a pocket edition of Gray's "Manual of Botany." I recognize the tenderfoot botanist, and a dozen years of desultory herborizing on the Coast have not, I am humbly thankful to say, hardened me to her case. (I say *her* merely for simplicity of diction and in default of our language's sadly needed double-gender pronoun; sometimes she is a man.) Nobody told her before she left the East, or if anybody did, she did not realize the significance of the report, that Flora turns over a new leaf at the Rocky Mountains and yet another at the Sierra Nevada, and that in all California she would find scarcely an indigenous herb, bush or tree that would be familiar to her. There are pines, to be sure, and oaks, but not one is of a species she loved in her dear New England

or Pennsylvania or Indiana. There are sumacs, but who would know them? There are violets and buttercups but not the violets and buttercups of home; alders and elders, but they are of the dimensions of forest trees; and there are hundreds of flowers and plants the forms and faces of which are so absolutely unfamiliar that she cannot even guess their names. And none of these outlandish Californians can she run to earth in Gray.

"As far as botanizing goes," she wails, "I might as well be in Kamchatka or Timbuctoo; for the bookstores tell me there is no counterpart of Gray[1] for the Coast flora, and I love Gray!"

As a matter of fact there are indigenous to California about the same number of known species of flowering plants including sedges, rushes and

[1] "A Flora of California," by Dr. W. L. Jepson, of the University of California, aiming to cover the entire State, is now being issued in parts from time to time, but is yet far from completed. Meantime the student will find useful the same author's "Flora of Western Middle California," Hall's "Yosemite Flora" (which covers the principal trees, flowers and ferns of the Sierra region); Abrams' "Flora of Los Angeles and Vicinity," and Hall's "Compositae of Southern California." "The Botany of the Geological Survey of California," issued in two large volumes in 1880, and to be consulted in public libraries, is also authoritative, but because of its early date it is lacking in the description of many plants. For description in popular language of the most noticeable flowers and shrubs, "The Wild Flowers of California," by Mary Elizabeth Parsons Hawver; Margaret Armstrong's "Western Wild Flowers" are excellent, as, for arboreal plants, are Miss Alice Eastwood's "Handbook of the Trees of California," and Dr. Jepson's "Sylva of California."

grasses—that is, between 3,000 and 3,500—as are native to the country east of the Missouri River, and north of Tennessee and North Carolina, the region of Gray's Manual. Of this number there are perhaps not over 200 native species common to both floras. No wonder, then, that the newcomer in California finds practically every plant a new species to him, and many of them new genera. On the other hand, certain familiar sorts are noticeably wanting. This is particularly true of trees. The California forests are largely coniferous. We search in vain for native chestnut or beech, hickory or locust or elm, linden or magnolia or tulip-tree. There is one walnut, a small tree often a shrub, and not very abundant—the English walnut of the ranches being of course introduced. There is a box-elder, but it has a look of its own and is given varietal distinction by botanists; and there is a versatile chinquapin, which on high mountains makes a low-growing chaparral, while under favorable conditions at lower elevations it has been known to attain a height of a hundred feet or more. Of three maples, two are shrubby and mainly found off the beaten track of travel. The other, however, *Acer macrophyllum* or big leaf maple, is one of the most distinguished of trees, growing to a height of seventy-five or eighty feet, and possessed of leaves typically maple-like in

form but surprisingly large, each sometimes a square foot or more in area. Few trees are more striking than this noble maple in the spring, when its crown of generous foliage is enlivened with pendent fragrant clusters of yellow bloom. Like its eastern cousins it is deciduous, and the leaves before falling, take on the beautiful golden tints of autumn. The timber possesses qualities valued by builders, who put it into the hardwood floors of many a Pacific coast bungalow.

Of the oaks which the early Spaniards called *robles* and *encinas,* something has been said in a previous chapter. Though less numerous to-day than in former times, their symmetrical, spreading crowns still dot valley and mountain side, and awaken the admiration of every observant traveler. The ground beneath one of these magnificent trees makes a fascinating camping place, the great, lower limbs often drooping at the tips to enclose it as with the wall of a tent, thirty or forty feet from side to side; and every summer in some parts of the State, whole families make such spots their home for longer or shorter periods, bringing their cots and cookstoves, and tasting in this twentieth century of grace the delights of those early times when primitive man, awakening to thoughts of architecture, began building his shelters each with a tree for a cen-

ter. It is an interesting fact that the two most distinctive species of California oaks—the deciduous *Quercus lobata* and the evergreen *Quercus agrifolia*—were the first of all California trees to be published by a botanist, the Spaniard Nee being the author of the descriptions of both (Madrid, 1801). They are wholly of California, being found indigenous nowhere else in the world, if we count the lower peninsula within the term. An interesting feature of several species of the California oaks, including these two, is the occasional remarkable slenderness of the acorn, reduced at times to the similitude of a long, stout spine. In some regions of the State, as in the Paso de los Robles traversed by the Southern Pacific Coast Line between San Francisco and Los Angeles, the oaks are noticeably draped with hanging tufts of gray, which travelers are apt to take for the "Florida moss" of the live oaks in the South Atlantic States. They are not at all that flowering epiphyte, however, but a very different plant—a species of lichen.

Three Rare Conifers

The coniferous woodlands of the Pacific Coast are not only in many respects the most remarkable in the world for beauty and grandeur, but they possess another interest in including a fir, a pine and a

cypress, that are among the rarest of trees. The fir is the so-called Santa Lucía fir (*Abies venusta* or *bracteata*) which occurs only in a restricted area of one of the wildest regions of California, the Santa Lucía Sierra of Monterey County. It is a striking tree, branched usually to the ground and rising from a broad base to the height of sixty, seventy or even a hundred feet, the crown narrowing upward rather rapidly and terminating in a high, slender leader like a church spire—a characteristic so marked as to render the species distinguishable as far off as the eye can reach. The cones, not the least remarkable feature of the tree, bristle with long antennae-like needles which are the prolonged tips of the cone scales. This fir exudes an aromatic gum, which was turned to account by the Franciscan Missionaries of the region as fuel for their censers. For this reason they called it *árbol de incienso*—the incense-tree; and this fact probably led to its botanical discovery by Dr. Thomas Coulter, who appears to have been at the San Antonio Mission in the Santa Lucía country in 1831, and who afterwards spread the fame of the tree in Europe. Its remarkable features brought other collectors from time to time, who introduced it into cultivation abroad. Even at the present day, you can hardly please a tree lover more than to take him a jaunt to the haunts of this fa-

mous rarity—a quest, however, which necessitates a camp outfit, stout legs and the expenditure of several days of time, to be entirely satisfactory.

Also in Monterey County is the native home of one of the most widely cultivated conifers in California—the Monterey cypress (*Cupressus macrocarpa*). As a wild tree, it occurs in an even more circumscribed area than its neighbor the Santa Lucía fir—being confined to two scattered groves at the edge of Carmel Bay. One of these is to the south of that lovely water, on Point Lobos; the other to the north, on Cypress Point. The wonderful old trees on the bluffs at the latter place, their flattened tops blown by centuries of storms into all sorts of arboreal phantasms, are among the sights cherished by every tourist who takes Monterey's Seventeen-Mile drive. Be kind to the driver, as he prattles to you of these old giants of the shore, which he will unblushingly tell you are of the same "specie" as the cedars of Lebanon, and anywhere from one to two thousand years old. Be kind to him, but do not believe him. They are not cedars at all, and as for their age, while nobody knows, you cannot get any botanist to believe from present evidence, that they live over two or three hundred years, at the most. From those inspiring storm-swept heroes to the evergreen roosters and teapots carved in the

hedges of Burlingame and Los Angeles, is a far cry, but in point of fact the hedges are of the same stuff as the trees. The Monterey cypress, removed from the pelting of ocean northwesters is quite a conventionalist in method of growth; moreover it lends itself with peculiar complaisance to the fancy of the topiary artist. It has, accordingly, long been a favorite in California for hedges, the tree in such situations of course being continually cut back to required dimensions; and it has also been extensively planted for wind-breaks and as a shade tree; so in spite of the small area to which it is indigenous, it is of all the State's trees, one of the best known to Californians, and indeed to the world at large. Its seeds have been shipped around the globe, and it is now cultivated even in the antipodes.

Also in cultivation to-day, and therefore for the present safe from the extinction which threatens rare wildings through the settlement of the country, is the third of this trio of coniferous rarities—the Torrey or Soledad pine (*Pinus Torreyana*). It is indigenous to a few miles of territory near the mouth of the Soledad River between Del Mar and La Jolla, in San Diego County, and to Santa Rosa Island off Santa Barbara, and nowhere else at all. The tree was described by Dr. C. C. Parry, whose attention was called to it about 1855, and named by

him in honor of John Torrey, the distinguished co-worker with Dr. Asa Gray in the virgin fields of American botany. It is a small tree, with little that is noteworthy to commend it to the non-botanical except possibly its rather squat cones which evince great reluctance to leave the limb, persisting there for four or five years; and when they finally do drop, they leave the basal part affixed to the tree. The mainland locality occupied by the Torrey pine is exceedingly picturesque and wild on seaward-looking hills, with flowery, sunny cañons and arroyos opening to the Pacific. A public road runs through the midst of the scattered trees, but otherwise they are quite removed from public haunt, offering a rare tavern of the open to picnickers and those contemplative souls who love that happy combination of the shade of a tree and the long, long vistas of the sea.

The presence of these three groups of rare trees gathered on three little scraps of territory along the ocean's marge, like passengers huddled here and there on the deck of a sinking ship, is a striking fact that has given rise to much speculation. Are they the last of a vanishing race or the forbears of a coming one? Why are they here and nowhere else in the world? One, though, does occur on an island a hundred and fifty miles away; and by way of sup-

plement, botanists have discovered a number of rare plant forms common to the mainland coast and to those islands that stretch like peaks of some outlying submarine mountain range from Santa Barbara to Coronado. The trend of evidence is that in some former age the California mainland extended westward to that chain of islands; that a subsidence later of the extensive area between the islands and the present coast line, carried down with it a vast multitude of trees and plants; and a few remnants have to this day clung upon the outskirts of the submerged territory. It is safe to assume that our three lone conifers are of these remnants—like Wordsworth's *Lady of the Mere,*

"Sole sitting by the shores of old romance."

Madroño and Laurél Silvestre

Traveling through northern California, whether by train or motor-car or more primitive mode, you can hardly fail to notice in the forest now and then the presence of tall, slender trees, with remarkably smooth, red branches and glossy foliage that suggest magnolias. They are the tree which Californians are disposed to call the madrone, a slurring of the Spanish *madroño,* a word which people interested in the purity of language dislike to hear mutilated. Like the subject of Halleck's famous

apostrophe, the madroño is known, only to be loved, and named but to be praised. We often speak carelessly of this or that as an aristocrat among trees, but when we see the madroño, our voices are hushed involuntarily and we find our hats in our hands; for this is the obvious aristocrat of them all, the bluest blood of the forest; there is no other like it. Maybe you know Bret Harte's spirited poem about it? He calls it several pretty names—"captain of the Western wood," "gallant of the glade," and so on. Besides a certain patrician grace of manner that distinguishes it, it has a charm of color that is remarkable. The bark, more particularly of the limb, is thin and smooth and of a striking shade of red. About July it begins to peel off in flakes and quills, and falls to the ground, revealing the under bark which is first of a satiny green but gradually deepens to red. Simultaneously with this change of bark, new leaves put out and the old leathery leafage is discarded, strewing the woodland floor beneath them with autumnal tints in midsummer. Meantime the waxen-white urns of flowers that adorned the trees in February and March like sprays of aerial lilies of the valley, have given place to clusters of rough-jacketed little berries, which in autumn turn orange scarlet, and make flush times for the doves and deer far into the winter. It is a tree

that, whatever the season, seems always full of the enthusiasm and hopefulness of youth.

The madroño, while found sparingly in the south—a few trees denizen the skirts of the Mount Wilson trail north of Pasadena—is at its best from the San Francisco region northward, extending through the coast country of Oregon and Washington to Puget Sound. It appears to have been in the last named neighborhood that it was first seen by a botanist—the Scotchman Archibald Menzies, who made England acquainted with it. In his honor it was named *Arbutus Menziesii;* and by the way, if you are not Scotch it may surprise you to know that this collector's name was pronounced Ming-iz. Long before Menzies, however, the tree had caught the eye of members of Portolá's Expedition of 1769, as they turned southward after the discovery of San Francisco Bay. Under date of November 5 of that year, Padre Crespi records: "These last two days many madroños have been met with, although the fruit is smaller than the Spanish but indeed the same kind."[2] Madroño is Spanish for the strawberry-tree of Europe (*Arbutus unedo*), and those pioneers made a happy guess in calling it as they

[2] "En estas dos jornadas ultimas, se han encontrado muchos madroños, aunque la fruta es mas chica que la de España pero si de la misma especie."

did, for it really is an Arbutus, closely akin to the European, though not, as Crespi thought, the same species.

Another remarkable tree, of which the traveler in the California woods is not long ignorant is the California laurel—the *laurél silvestre* of the Spanish-speaking population (*Umbellularia Californica*). It is peculiar to the Pacific Coast and is of the same family with the camphor, the sassafras and the laurel of history and literature; a very variable tree in matter of size, running all the way from twice the height of a man to a hundred feet and even upward. Whatever its inches, however, one need never be in doubt about its identity because of the pungent odor of the leaves, which, pinched between the fingers, or even brushed against as one climbs the trail, give off a fragrance not unlike that of bay rum. The pleasant aroma sometimes tempts the inexperienced to sniff a lot of it, but generally only once, as it is apt to produce headache or violent sneezing. Perhaps the latter effect is responsible for the name pepper wood, by which the tree sometimes goes. On the homeopathic principle, the Indians, according to Mr. Chesnut, recommend a leaf put in the nostril, or several in the hat, to cure headache; while as a discourager of fleas the foliage strewn about the premises is said even by white people to

be effective. The laurel abounds in California from one end of the State to the other, and across into southwestern Oregon, where it is known as myrtle. It is a neatly dressed, dignified tree with rich green leaves that persist for several years, and bears a fruit in appearance surprisingly like an olive. The oily, thin-shelled kernel, after roasting, used to appeal to the redman's palate in Northern California, where particularly in the redwood belt the finest specimens of the tree are found. The clustered greenish-yellow blossoms, individually inconspicuous, are pleasant features of a midwinter ramble in the cañons and foothills, when the tide of wild-flower life is at its lowest.

Among the Tarweeds in the Sierras

Riding one day with a California mountaineer, I asked him if he knew the name of a certain flower blooming by the roadside. He glanced at it with lack-interest eye, and shifting his quid, remarked:

"Search *me,* partner, some kind of blasted tarweed, I guess."

I pricked up my ears at that, for I was then fresh from the East and tarweed was a new word to me. I have since learned it is a California specialty, and my first real acquaintance with the miscellaneous plant fraternity that goes by that name, began one

summer when camping in the sunny kingdom of the sugar pines in Central California. Here and there about our camp in the cheerful openness of the forest grew and bloomed mariposa tulips gay-winged as butterflies and bright-faced monkey flowers; golden eriophyllums, fritillaries in chocolate and green, and fragrant blue lupines; lilies and wild roses and gilias of as many hues as Harlequin's coat; but commoner than any was a twinkling white flower like a strawberry blossom resting solitarily upon a low, shrubby plant whose finely dissected leaves, spread like a mat, covered considerable areas on the slopes and banks beneath the giant pines. The foliage was fragrant with an aroma suggesting tobacco, and sticky to a degree that was as embarrassing as molasses, as I discovered after gathering some specimens for consultation with the Professor.

"*Chamaebatia foliolosa,*" he pronounced it with learned formality, "but the mountaineers sometimes call it 'mountain misery' which is not a bad name, because any one walking through the patches of it, which are everywhere, gets his shoes and trousers miserably tarred up with the viscous clothing of its leaves. Sheep and cattle become smeared with the same stuff, and the mountain people tell me that by autumn cowbells sometimes become so clogged up

with it as to be all but inaudible. They call it tarweed, too, which would be good enough except that that name properly belongs to two or three genera of *Compositae,* with similar sticky coats. We'll find them hereabout, too."

Some weeks after that in the cool of an early August morning, as I walked campward after a bout with the trout, I was surprised to see a part of the woodland which I had thought flowerless, starred with hundreds of lovely daisy-like blooms, yellow-rayed with red centers. Stooping to pick some, I found my hands quickly gummed with a viscid excretion from the plants, and I did not need the Professor to tell me I had now discovered a simon-pure tarweed. I did, nevertheless, pilot him to the spot at noon, only to find to my astonishment, that every flower had vanished as in thin air! The blossoms were nocturnal. It was the species called *Madia elegans,* and as the summer merged into autumn I had an opportunity to extend my acquaintance to half a dozen species both of *Madia* and the kindred genus *Hemizonia.* The latter tribe is exclusively Californian, the flowers often handsome in white or yellow or pink, all opening at evening and closing in the brightness of the risen sun. It includes some twenty-five species growing in various parts of the State, and in all sorts of situations—in valleys and

on mountain heights, in dry arroyos and on what Dr. Gray pleasantly termed "desiccated plains." Of *Madia* there are about a dozen species and varieties, some of which slip over the California border into near-by States northward and eastward.

While the great abundance of these sticky plants makes them at times a great nuisance to ranchers and to pedestrians with a regard for neatness of attire, they possess more than a passing interest to the contemplative mind. In California the warm, dry months of midsummer and early autumn, when their flowers appear, are a season of rest for most wild plants, just as winter is a time of plant dormancy in colder climates. The rains have long since ceased; the ground is baked on the surface, and dry apparently as bone for a foot down; the degrees of the air's relative humidity are fewer at times than your fingers; and except where cultivation and irrigation keep up a mantle of green, the general tone of the landscape is dun and sere as in the eastern November. Then it is—after months of drought and not till then—that these tarweeds and a few boon comrades of other sorts, begin to warm up to life, to spread their petals to the sun and invite the bees. One wonders where in the midst of almost desert conditions they get the wherewithal to make their brave showing. The secret of this success would

seem to lie in appreciation of the day of small things and the exercise of a rigid economy. In a dry land where months ago the lush vegetation of the spring withered and gave up the ghost, these gleaners of the later year find still some moisture, and of that little they waste no tittle. As the watery income through the roots is small, every jot must be turned to account, and all unnecessary leakage stopped. That is common sense and good business—the principle of reducing expenses when receipts are small—and what enables the tarweed to do this when most other plants cannot, is the coating of hair and gumminess that excite our selfish ire as we tramp ruthlessly through its preserves. This covering reduces to a minimum the evaporation of the pittance of water which the plants manage to suck in, holding it inside until it can be utilized in the manufacture within leaf and stem of the elements needed for life.

I confess to a great admiration for that tarweed way of doing, like the thrift and integrity of the self-respecting human poor. Not all plants are of so industrious a habit of life. Some are downright pilferers, sinking their roots into other plants' anatomy and extracting their juices, as a pick-pocket relieves a man in the street of his week's wages; and others, like the "tomato-can hobos" of city gutters, live on the decaying refuse of the woods—a useful,

scavenger sort of existence, if you will, but lacking somehow in the dignity of earning your own food and preparing it. Of this gentry are two rarities which we turned up at different times in our sierra rambles. There was a certain trout-haunted brook in the forest tangle, which lured us now and then of an evening, and on one of our jaunts, the Professor called my attention to some upright gleams of light in a little darkling dell that lay just off the trail.

"The ghost-flower," he remarked.

Nothing could have been better named—the delicate slender pencils of white a foot high or more, seemed indeed like sheeted floral phantoms. From base to blossom-crowned tip they were as colorless as our eastern Indian pipes. On examination the plant proved to be an orchid (*Cephalanthera Oregana*), and fragrant with an aroma suggesting vanilla. The absolute lack of green is of course due to the saprophytic habit of the plant, which feeds entirely upon the decaying substance of the vegetable kingdom.

In a similar situation among dead leaves was our other find, the snow plant of the sierra (*Sarcodes sanguinea*). On our way into the mountains we had seen specimens of this brilliantly colored parasite planted in lard kettles and set for decoration on the

porches of mountain cabins; for it appears to be a favorite posy with mountaineers, the most careless of whom could hardly fail to notice it flaming up at his feet. In the Yosemite National Park it is now forbidden to pluck it—a wise provision as the thoughtless habit of many people to tear up and kill what arrests their momentary interest, has threatened to exterminate this wonderful plant in the neighborhood of the Yosemite. Club-like and stocky of form, it is not of much appeal in any particular except color; but this is of such a rich, glowing crimson, especially when lighted up in the sunshine, that the most stolid can hardly fail of admiration. Finding it on a summer day, when snow is long past, one is disposed to question the correctness of calling it snow plant; yet the name is proper enough, for there is no question that it is at times to be seen blooming in the midst of snow. In high altitudes many flowers, because of the shortness of the season, start into growth and blossom at the edge of melting snow banks, and the snow plant often does the same. A belated snow-fall—a not unusual occurrence in the High Sierras even in June—piling about such plants, would give the effect of their having actually bloomed in the snow. As a matter of fact, the young plants have been observed to have pushed above the ground in autumn,

so that probably but a few days of suitable weather in the spring are needed to open the flower. Mr. Meehan has stated on the authority of Dr. C. C. Parry, that miners used frequently to find the plants under snow slides. A denizen of coniferous forests, the Sarcodes has been considered a parasite on the tree roots, but there is evidence that it may really be an example of symbiosis—a curious partnership with some fungus which in return for board and lodging, acts as a gatherer and preparer of nitrogen for its host. As is the case with a number of plants which California has preëmpted for her own, the snow plant is now known not to be absolutely confined to the State, but is found in places across the border in Oregon and Nevada. Neither, within California, is it limited to the Sierra Nevada, as was at first supposed, but is often met with as far south as Mount San Jacinto.

Some plants, as is well known, are not averse to a bit of meat with their meals, and among such one of the strangest is the California pitcher-plant (*Darlingtonia Californica*), which occurs in mountain bogs at high altitudes in the northern part of the State, from Truckee Pass to the Oregon border. Its most remarkable feature is the character of the leaves. These are hollow and tube-like, enlarging upward, and attaining a height varying from a foot

and half to nearly a yard. At the summit each leaf expands in the form of a curious dome-like hood from two to four inches in diameter. At the under side of this dome, which is mottled with translucent yellow or orange spots, is a small opening that leads into the interior. At this entrance a pair of narrow reddish wings, like pennants, are fixed, clothed with stiff hairs pointing towards the hole, about which a sweet secretion, pleasant to insect palates, is temptingly spread. The entire leaf along one outer side is pinched up into a ridge, also exuding sweetness, that leads from the ground to the opening under the dome—the mouth of the ogre's den. Was ever a more alluring device to draw an unsuspecting little bug to his ruin? Accepting the invitation of the elevated pathway up the pitcher an ant or other leg-traveling insect by and by arrives at the delectable feast of sweets spread about the upper heights, and little by little is lured within the dome. Insects that fly are attracted by the brightness of the pennant-like wings, upon which alighting, the downward-pointing hairs keep them traveling until they, too, are inside the dome. Here the light of the vaulted roof, as from a skylight, makes progress downward more cheerful than to turn backward through the dark doorway; besides there are more hairs pointing downward. So downward into

Avernus the insect proceeds, until suddenly he drops into a well of clear liquid that fills the lower part of the hollow and is secreted by the plant for the express purpose of entrapping him and his like. Once in this he drowns miserably and becomes meat for his captor's consumption. Leaf-tubes six inches deep in decaying insects, and smelling accordingly, have been collected; and Mr. Henry Edwards, an entomologist who some years ago recorded the results of his researches, stated that he felt convinced that every insect order in California was represented in the seething-pots of a *Darlingtonia* kitchen. Even snails are sometimes caught.

Since the leaves grow in clusters, the plant is very noticeable at a considerable distance, resembling as it does, so many erect snakes with mottled-hooded heads. It was this showy sort of advertisement that was responsible for its first discovery. One day in October, 1841, J. D. Brackenridge, a botanist of the Wilkes Exploring Expedition, was collecting plants a few miles south of Mount Shasta peak on the boggy borders of a tributary of the upper Sacramento River, when he came unexpectedly upon some Indians whose looks he thought hostile. Believing prudence the better part to play, he set out at a run to overtake his companions, and as he went he caught sight of this strange plant at which he made

a clutch *en passant.* When he reached camp and examined what he had caught up, it proved to be parts of the leafage with some vestiges of seed vessels but no flower. It was enough, nevertheless, for John Torrey to recognize a new genus, which he named in honor of Dr. William Darlington, an old time Pennsylvania botanist. In 1851, Dr. G. W. Hulse collected the plant in flower, perhaps at the very spot where Brackenridge had made his flying catch, and a complete description for the first time then became possible.

IX

BIBLE PLANTS IN CALIFORNIA

IN its physiography, California is Palestine multiplied by sixteen. Both are relatively long and narrow, extending north and south, with lofty mountains and with depressions that drop in some cases below sea level. In each there is a fertile coast country bordering a western sea, upon which the mountains look down. The inland valley of the Jordan has its counterpart in California's greater valley of the San Joaquin, and the sink of the Dead Sea is paralleled in a way by our terrible Death Valley. Deserts to the south and east hem both lands in. So, too, in climate, California's dry summer and more or less rainy winter, are repeated in Palestine; and according to Mr. Aaron Aaronsohn, Palestine's most famous botanist, the flora of the Holy Land approximates the same number of species as that of the Golden State—about three thousand. "There are many other points of similarity," to quote the words of this authority,[1] "between

[1] "Agricultural and Botanical Explorations in Palestine," Washington D. C., 1910.

the vegetation of California and that of Palestine. In both sections evergreen shrubs predominate. The same forms of vegetation, often the same genera, are found on Mount Tamalpais, California, and on Mount Carmel, Palestine; the maqui formation of Palestine is to be compared to the chaparral and chamiso of California; and the forms of vegetation of the Lebanon and the Hermon mountains are much the same as those of the western slope of the Sierras." It is not to be wondered at, then, that the traveler in California sees in field and garden many an introduced shrub and tree familiar to him through the Scriptures.

When the first soaking rains of winter have turned to emerald the round, treeless lomas of our coast country, the Professor likes to hitch up the family horse to an ancient buckboard that he owns, and go for a jog among the ranches that lie here and there in the dips and on the crests of the foothills that skirt our little city. Sometimes he invites me to accompany him. Gladly we leave the macadam of the urban boulevards, and with it the clang of electric cars, the braying horns and gasoline fumes of whizzing motor-cars; pass the last of the millionaires' palaces embowered in exotic vines and flowers; and turn into an old-fashioned country road. Mocking birds are bubbling over with riotous song

in every field; meadowlarks drop their ordered, liquid melody from fence rail and gate post; bees are plundering the white blossoms that swing in clusters from the blue-gum boughs. There is a whiff of mingled violets and petunias from the beds that border a ranch entrance, and roses, white and red, are blooming in the hedge. Far off in the hills, which are whitening under the opening blooms of wild lilac, the quails are calling; in the vineyards the pruners are cutting back last year's branches to two eyes, whistling in the sunshine as they work; and plowmen with teams of six or eight horses are turning up the dark soil for the barley sowing. The Professor is as happy as a schoolboy, and I detect in the song he is humming a bar of "I love you, California."

Ahead of us glows a hillside which owes its color to the ruddy twigs of an apricot orchard not yet in leaf. The Professor points to it and observes:

"With all that has been said about the apple in the Scriptures, do you know that nobody yet can tell just what fruit is meant? Some say it is the quince, some the citron, and there are others who claim it was really the apricot. Certainly this has been a favorite fruit in Syria and Palestine, and apricot-paste, dried in the sun, softened with olive oil, and made up into little rolls, is one of the famous foods

of the Orient that Californians might well adopt. I like the apricot, but I never really knew the taste of a fresh one till I came to the Coast. The article you buy in the East for a California apricot is picked unmatured in order to carry across the continent, and is not in the same class as the luscious, blushing little fruits that drop into your hand when you jar them fully ripe from their native stems."

So gossiping, we top the hill and descend into a quiet valley where, though January is still not quite run out, an orchard is enveloped in a dainty cloud of pink and white bloom resting lightly upon leafless branches. There is no doubt about these trees—they are the almond—frequently mentioned in the Old Testament, of whose wood Aaron's rod that blossomed was made, and whose inflorescence and nuts were wrought by Moses into the gold work of the candlestick of the tabernacle. It is the earliest of fruit trees to flower, and because of its haste the young nuts are apt to be nipped by late frosts. Passing this way in summer, we shall see the green-jacketed almonds amid the leaves, in shape and look not unlike unripe peaches. They are indeed cousins to the peach, but the pulpy part instead of growing fatter and juicier with age, becomes thin and dry, and at maturity splits open, releasing the nuts.

"And speaking of the Bible," the Professor goes

on, as we turned down a road past a vineyard, "the vines mostly grown in California are the real grape of history, coeval with Noah. The eastern Concords, Delawares, Niagaras and all those sorts that pop from their skins, are comparatively recent developments of native American species found in the woodlands of the Atlantic seaboard. The Old World stock, the *Vitis vinifera* of botanists, is very different, nor will it stand the same degree of frost as the American varieties. The California climate, however, suits it perfectly, and the old Padres quickly established it here. The variety they planted is still cultivated in California and is called the Mission grape, though there are now a score of other European sorts besides. It bears, at its best, enormous bunches, a couple of feet long, which remind one of the famous cluster which the Israelitish spies of Moses cut in the Valley of Eshcol and two men bore between them on a staff. They were practically the same sort as our Mission kind—at any rate some variety of *Vitis vinifera,* which is the grape of Palestine.

"There is something very fascinating to me about a California vineyard, even now when the vines are cut back, as the annual custom is, to within a foot or two of the ground, so that there is nothing but a checker board of black stumps,

as seemingly lifeless as the burnt vineyards of the Philistines must have been after the fire-bearing foxes of Samson had overrun them. But come along in summer or early autumn and you see the same vineyard one wide, green lake of billowy vines bowing to the ground—we don't usually trellis them here—and the grapes, black and purple, white and red and amber, glowing and gleaming amid the leaves; and when you put one in your mouth—a Black Hamburg or Flaming Tokay or Muscat of Alexandria or Mission—it takes you, or it does me at least, right back to the youth of the world; for you are eating the fruit of the same stock that Noah set out when he began to be an husbandman and planted a vineyard there by Ararat.

"Of course, I don't mean that Noah planted these specific varieties," explained the Professor, dropping to earth again; "but they are developments from that ancient stock. The father of modern grape culture in California was a Frenchman, Jean Louis Vignes, who turned up in Los Angeles about 1830, liked the place, settled, lived and died there. He enjoys the doubtful immortality that comes to a man from having a street named for him—poor stuff, for not one person in ten thousand who walks along Vignes Street to-day knows why it has such a queer name. Vignes saw there was a future in Cali-

fornia grapes and soon supplemented the old Mission stock by importations of other varieties of *Vitis vinifera* from France. The scions were shipped from France to Boston, I am told, and thence around the Horn in sailing vessels—hide droghers, doubtless, such as Dana tells about in his 'Two Years Before the Mast,' which traded up and down the Coast in those days. Vignes was a popular citizen in his time and lived in a house near the Los Angeles River with a fine old sycamore tree before it, of which he bragged as much as he did of his grape vines. The Spanish-American word for sycamore is *aliso,* and so he was nicknamed Don Luis del Aliso. The tree is long since swallowed up in the growth of the city, but its memory is preserved in the name of an important business thoroughfare, Aliso Street. Vignes believed in oranges, too, but the man who gave the first impetus to orange culture in California was a Kentuckian named William Wolfskill, who landed in Los Angeles about the same time as Vignes. He was a trapper and had come across the deserts, arriving in the City of the Angels dead-broke. Trying to raise money to get away, he finally realized California was a good enough place to stay in, and turned his attention to horticulture, particularly oranges, starting in where the Padres left off. He originated a budded seedling that was as famous in

its day as the Washington Navel is now. He also went in for grapes, and not long after the gold discovery he set out a vineyard in the Napa Valley as nearer the crack market of those days than Los Angeles, and began selling his crop in San Francisco at $25 a cental wholesale. He told Major Horace Bell, 'I am now realizing a boyhood dream of a country where money grows on bushes. Selling grapes at two bits a pound is as near picking money from bushes as any business I know of.' "

As he turns the horse's head homeward, the Professor flicks with his whip a clump of flat-jointed cactus that sprawls by the roadside.

"They tell me that's a plant nowadays abundant in Palestine," he chuckles, "but the Bible is silent about it. Maybe you know that cactuses never reached the Old World until after Columbus discovered them in America? Ignorance of that fact has fooled many an artist into working prickly-pear plants into Syrian desert pictures along with the Holy Family."

The frequent presence of the olive in the California landscape, particularly in the south, does much to give to the region its Old World look, and brings constantly to mind the imagery of the Old Testament as one travels amidst the peculiar beauty of these trees of ancientest lineage, emblematic to

the Hebrews of prosperity and the blessing of God. "Happy shalt thou be and it shall be well with thee . . . thy children like olive plants round about thy table;" and it was a green olive leaf brought to the Ark by the returning dove, that was to the Noachian company the promise of better times at hand. The peculiar ashen-green foliage, persisting throughout the year, causes an olive-yard to be readily picked out from surrounding trees, even at a long distance; and one to whom the Bible narratives are precious, finds in the atmosphere of olive groves—even the comparatively young ones of California—gardens of sacred memories. The ripe fruit is a bright, glossy black berry, and singularly tempting in looks, but the taste is intensely bitter and astringent, and one wonders that a process to make an olive edible should ever have been discovered. Among Californians the prepared ripe olive is generally preferred to the green, and with a reason—being tenderer and more digestible, as well as exceedingly nutritious.

That eminence of holy memory near Jerusalem, called because of the abundance of its olive plantations, the Mount of Olives, was hardly less famous in ancient times for another tree which is plentiful in cultivation in our Land of Sunshine—the fig. This is one of the most majestic of our orchard trees,

and although perhaps no specimen now standing in the State is much over sixty years old, one encounters here and there, in Central California particularly, trees a yard through at the base and with crowns casting a shade fifty or sixty feet in diameter. The most famous of these great figs is one planted in 1851 on General Bidwell's Rancho Chico in the Sacramento Valley. Colonel C. C. Royce, formerly manager of the ranch, informs me that measurements of this tree taken a few years ago, showed it to have a trunk circumference at base of 12 feet, 8 inches, a height of 75 feet, and a spread of branches of 115 feet to 118 feet. One of the principal limbs measured about two feet in diameter. This remarkable tree, which is still standing though now because of infirmities in the hands of the tree doctors, had the habit of extending its lower branches downward until they touched the ground. There taking root, they followed the example of the parent stock, dropping branches to the earth in their turn, and doubtless the tree would have continued indefinitely so spreading, had progress not been curtailed by pruning.

It behooves one, then, who plants a fig tree in his garden, as people all over California like to do, to give it plenty of elbow room—a radius of twenty feet all about it being none too much. These great old

figs with their generous summer shade and successive abounding crops of fruit that begin in early summer and continue until late in the autumn, are among the pleasantest features of California ranches. I have in mind, as I write, one that stood by the dwelling of a rancher in the Santa Clara Valley, whose hospitality I once enjoyed. The tree's ample spread of foliage was as impervious to the sun as a shingle roof, and a cool draught seemed always passing through. All the warm, rainless summer the family utilized its shade as a dining hall and living room. The long table was always there, and chairs and hammocks. Meals eaten in that natural bower brought a realization of the peace and security which the ancient Hebrews associated so peculiarly with dwelling under one's own vine and fig tree; and when the cool nights and rains of autumn came, the leaves fell, letting the blessed winter sunshine into the house.

There are several varieties of fig planted in California but none seems more popular than the black Mission stock of the Spanish Franciscan's introduction, though its fruit does not dry so well as the Smyrna sorts of more recent setting out, and such as are caprified. The dweller in the land of the fig-tree, however, does not wait for the drying. He plucks the fresh fruit when dead-ripe—not till

then is its full sweetness developed—peels back the outer skin and without further parley plumps the rosy, seedy, mushy pulp into his watering mouth. The fresh fig possesses a mild, sweet taste—mawkish, you may think it, at first—which, until the palate is accustomed to it, is made more attractive by the addition of cream and sugar when served at table. That the old Israelites must have enjoyed the fresh fig, too, is attested by that striking figure of the Prophet Nahum: "All thy fortresses shall be like fig-trees with the first-ripe figs; if they be shaken, they fall into the mouth of the eater."

Another typical fruit of the Bible is the pomegranate. It, too, thrives well in California—a land which indeed conforms markedly to that ancient word to Israel: "Jehovah, thy God, brought thee into a good land . . . of vines and fig trees and pomegranates." "A garden shut up is my sister . . ."—so runs the Song of Songs—"thy shoots are an orchard of pomegranates, with precious fruits." The Spanish settlers in Southern California had an oriental fondness for the pomegranate—*granada* they called it—and it is an inhabitant of most old-time gardens, a shrub or small tree beautiful at all seasons except winter, when it is leafless. In spring and early summer the glossy green foliage glows here and there with the fire of

the brilliant scarlet flowers, which are succeeded in autumn by the hard-husked, rusty-orange fruit, bending the branches. Often, as one travels country roads, neglected bushes of it are passed by the road side, the remnant of some ancient hedge—a use to which the pomegranate, like the lime now rarely seen, was frequently put in the old days of cheap land. Present-day Californians neglect the fruit almost entirely, in spite of the refreshing juiciness of the thin watery pulp, which in taste is somewhat like red currants with a dash of astringency. Perhaps the abundance of other fruits not so exceedingly full of seeds, causes this indifference, notwithstanding the pomegranate's very great value for making into a beverage peculiarly grateful in a warm climate. Among Spanish-Californians, Father O'Sullivan tells me, a favorite *postre* or dessert was a heaping plateful of fresh pomegranate seeds scooped from the rind and served with sugar. Pomegranates were also laid away on the fruit-shelf of the house to dry, as apples back East are spread on the attic floor; and in winter, though the rind was hard and withered, the seeds were still juicy and refreshing and were sucked out through a hole broken in the rind. With the lover of pure beauty, the pomegranate tree is always a favorite. The exquisite coloring of the lovely buds and of the crumpled

petals, as well as of the fruit both without and within, exert an irresistible appeal to-day as they did to the artists of old who sculptured the pomegranate's forms upon Solomon's temple and embroidered them into the hem of Aaron's priestly vestment.

A trim, little Syrian tree which is met with in increasing abundance in California is the carob, the *Ceratonia siliqua* of the botanists. It has a cheerful crown of leathery pinnate leaves, and bears—at least, the pistillate trees do—those flat, chestnut-colored pods that city street venders of fruit sometimes have in their stock under the name of St. John's bread. So far its principal use in California is as an ornamental shade tree, but the possibilities of its bean-like pods for horse and cattle feed put it in the class of economic plants of value. In Palestine, where the carob tree grows wild, and in the Mediterranean region generally, the sugary legumes have been fed from time immemorial to domestic animals, which fatten on them. To the lover of romance in plant life, the tree's especial claim to interest lies in the probability that "the husks that the swine did eat" mentioned in the parable of the Prodigal Son, were pods of the carob tree; and an old tradition credits it with being the tree that Judas hanged himself upon.

Also connected with the personality of the Scriptures is a reedy looking plant with shaggy grass-like heads, often grown in California gardens for ornament—the paper reed of antiquity (*Papyrus antiquorum*). Egypt taught the ancient world to make books out of this. The pith was extracted, cut into strips, and these laid side by side with others crosswise upon them, were subjected to soaking and pressure. Thus were produced sheets of writing paper upon which biblia or books were inscribed, sheet being glued to sheet end to end and all rolled together as a scroll. This reed once grew abundantly at the marshy borders of lakes and streams in Egypt, as it does to-day in Palestine and Abyssinia; and it was no doubt of this plant that the ark of "bulrushes" was made in which the mother of Moses placed him and hid him away by the river's brink, where afterwards the daughter of Pharaoh was to find him.

Ancient Palestine was famous for the deliciousness of its dates, and the palms of the Bible were *Phoenix dactylifera*—date-palms, under three score-and-ten of which by the twelve wells of Elim, the Israelites of the exodus once pitched their tents. It was the date palm which the Psalmist meant, when he declared "the righteous shall flourish like

the palm tree:" and it was with branches of the date palm that the people saluted our Saviour upon his triumphal journey to Jerusalem. The cultivation of this tree in California, while undertaken in a limited way by the Franciscan Missionaries, has assumed commercial importance only in the last few years, due to the discovery that its fruit can be successfully matured in certain sections of the Colorado Desert—notably a narrow depression somewhat below sea level in the desert portion of Riverside County, known as the Coachella Valley. The cultivation of the date there has now passed beyond the experimental stage, and considerable areas are being given over to the planting of a large assortment of varieties, the offsets for which have been secured from the groves of Arabia and Africa. At Mecca by the Salton Sea, for instance, or at Indio, both on the line of the Southern Pacific Railway, the observant traveler may catch sight, even out of the car window, of the evidences of this thriving young industry in its various stages from the cultivation of the small plants set in rows like so much corn, to the bearing trees heavy in autumn with golden clusters of fruit—an industry that carries the imagination back to the genesis of man, for the Arab tradition is that the first date palm was made

from the clay left over after the creation of Adam, and thus became the uncle of mankind.[2]

[2] Quoted in "Date Growing in the Old World and the New," by Paul B. Popenoe.

XII

BLOSSOM TIME IN THE ORCHARDS

WITH the growth of a human population, it is inevitable that the plants of the wind's wayward sowing shall be pushed farther and farther afield and much wild beauty be buried by the plow forever. As we look to-day from our car window at the cultivated plains of the San Joaquin, given over now to barley and alfalfa, peaches and grapes and dairies, we sigh to think of that former day, even yet remembered by old inhabitants, which John Muir has nobly pictured for us in "The Mountains of California." "The Great Central Plain," he writes, "during the months of March, April and May, was one smooth, continuous bed of honey-bloom. . . . Mints, gilias, nemophilas, castilleias and innumerable compositae were so crowded together that, had ninety-nine per cent. of them been taken away, the plain would still have seemed to any but Californians extravagantly flowery. . . . The air was sweet with fragrance, the larks sang their blessed songs, rising on the wing as I ad-

vanced, then sinking out of sight in the polleny sod; while myriads of wild bees stirred the lower air with their monotonous hum—monotonous, yet forever fresh and sweet as everyday sunshine."

Yet man's spoliation of the kingdom of the wild is not all unattended by beauty. Beauty is an immortal goddess; vanishing here, she reappears there; and nowhere is she more sure of being found than in gardens and in orchards. If California has lost some of the aboriginal loveliness that clothed her fertile valleys before the white occupation, she has but put on another charm in her cultivated areas, soberer but still very appealing. No sight in the State is more entrancing than the annual blooming of the orchards, which is made the more effective by the custom of the orchardists to specialize in different districts. In the valleys of the south, for instance, are mile upon mile of citrus-fruit trees; in the San Joaquin is the stronghold of the peach and the nectarine; the Sacramento Valley is the principal home of the pear; in the Pajaro Valley, apple is king; the prune and the apricot share the throne in Santa Clara County. The result is the beauty of the single peach or plum or pear which everybody knows the world over and makes much of in a spring ramble, multiplied literally by millions—an ocean of one kind of blossoms spread over

square miles in an all but unbroken sheet of color.

Beginning with the blooming of the almonds, which may occur in January, though it is not to be usually counted upon until February, the orchards reach the high tide of their bloom about the first of April. To most tourists the prince of the fruit trees is the orange. The apricot and the prune are only varieties of the plum, the nectarine and the almond forms of the peach, and there is nothing particularly novel in the sight of a plum tree or a peach tree; but the orange to the New Englander or the Middle Westerner is a fruit of romance. To pick your first ripe orange with your own fingers from a tree loaded with two or three thousand more—a tree growing not in a tub in a greenhouse but rooted outdoors in the ground like an apple tree—is in itself a poetic sort of experience to be talked about long afterwards around the winter fire back East. To quarter the lump of lusciousness with your penknife, bite the fragrant, juicy heart out of each quarter section and prodigally toss the rest away, is to have a touch of what it feels like to be a millionaire; but to drive on a day in March along a country road where the sunshine lies warm and the larks and mocking birds are singing, and where behind rose-hedges are unnumbered orange trees, crowned like brides for their bridal with myriads of starry, per-

fumed blossoms while yet the golden spheres of fruit are thick upon them, or to saunter through a grove when the petals are dropping and lodging in your hair and on your shoulders and whitening all the earth about you—that is to feel yourself set down in the orchard of the Hesperides, and the Greek fable does not seem much of a myth after all. It is a month or more from the time the blossoms begin to open until the last have fallen, and all that time the groves are a succession of mammoth bouquets of fragrance making delight for all who visit the orange-growing districts. Then, there are the lemon groves, equally fragrant, but the lemon, unlike the orange, which flowers only once in a twelvemonth, distributes its bloom more or less throughout the year. The culture of the orange used to be confined practically to Southern California, but it is being pushed farther and farther north in the interior valleys of the State, and it is now grown from San Diego to the upper Sacramento, though the south is still the undisputed center of the industry. Curiously enough the fruit ripens fully a month earlier in the north than in the south, because of the greater summer heat of the northern inland valleys, which are shut off by the Coast mountains from the tempering influence of the sea.

Beautiful as is the blooming of the citrus-fruit trees, the glory of it would be greater if it came upon leafless branches. As it is, the heavy, dark green foliage breaks up what would otherwise be a solid mass of white, and somewhat dims the general effect. The flowers of most deciduous fruits, on the other hand, come before the leaves, and turn the tree for the nonce into a huge posy of solid white or pink. The effect of square miles of fertile valleys and foothill slopes so draped in ethereal color is indescribable, and has caught the popular fancy of Californians to such an extent that in the fruit-growing districts the blossoming of the trees is becoming a time of festival. The Santa Clara Valley, for instance, which extends for fifty miles southward from the head of San Francisco Bay, with a width of fifteen or twenty, is practically given over to orchards of deciduous fruits. Of the five million bearing trees in this beautiful valley, famous from early Mission days for its fertility, three and a half million are prunes and there is besides a considerable sprinkling of pears and cherries. The rest, something over a million trees, are apricots and peaches. After the blooming of the latter usually in early March, a very pretty display in itself, the real blossom show occurs—the flowering of the prunes, the pears and the cherries, which is si-

multaneous and occurs in late March or early April. A few days of warm weather, and it starts with a rush, and the whole countryside is veiled in white. Mile after mile the roads carry you past orchards where every tree is garlanded, festooned and swathed in a gauzy raiment that seems let down from heaven—so pure and daintily fragrant it is, so glorified in the sun. That it should have burst from gnarled and knotty limbs, but now bare and brown, is miracle enough to cure the doubting Thomas in the most unregenerate of us, if we would but heed. It is not a case of just here and there an orchard, exquisite as that would be, but it is the cumulative effect of hundreds of orchards and millions of trees in perfect efflorescence that awakes the American enthusiasm in Santa Clara's blossom time; and when the news reaches San Francisco and the various cities clustered about the Bay, everybody with an automobile, or failing that with change for carfare,—electric and steam roads traverse the valley in many directions—gathers up wife and children and sets out the next Saturday afternoon or Sunday, to see the wonderful sight. Skirting meadows starred with buttercups, and topping green hills where myriads of blue lupines and orange poppies revel in the sun; spinning along level avenues athwart which now and again shadows

lie, flung by rows of giant eucalypts and by huge Monterey cypresses all golden-dusted with their lilliputian bloom; out into emerald valleys where cattle graze and the coast live-oaks stand in the same majesty that compelled Vancouver's admiration a century and a quarter ago; past the old palaces of Bonanza Kings and through Burlingame and San Mateo, Menlo Park and Palo Alto, with riot of roses and wisteria wreathing gate-posts and cascading over roofs and balconies—they find it a pleasant road to travel, even though there were no feast of flowers awaiting them in the orchards of Santa Clara.

In the foothills at the western edge of the valley, is the village of Saratoga. Half a generation ago after three successive seasons of heart-breaking drought that had all but drained the country of its last dollar, the coming around of normal conditions inspired the orchardists of the vicinity to commemorate the return of fruitfulness with some special ceremonies. So they instituted what they call Blossom Day, which now for twenty years has been celebrated every spring on the oak-fringed village green, at the time of the blooming of the prunes. From far and wide, the residents of the Valley and their visiting friends come to the festival in electric car and automobile, by ranch wagon and on horseback,

Americans and British, Italians and Portuguese, Spanish-Californians and Japanese—twenty thousand of them one recent spring, according to local count, which probably got them all. It is really a multitudinous sort of picnic, with country sports and a merry-go-round, a procession of floats decked out with blossoms and pretty girls, and speech-making from a platform under a massive live oak. The unique thing about it is that to get there you must ride through a veritable sea of snowy blossoms, and there is no way home except by the same white way.

After the blossom, the fruit; and in the waning year comes the harvesting of the crop, which gives another sort of picturesqueness to the Valley in late summer and the early autumn. It is a pretty picture—the crowds of pickers in the peach and apricot trees, the hauling of the fruit in boxes piled high on ranch wagons to the open airy sheds where women and girls sit at long tables to halve and pit it, and lay it in shallow trays that are spread on the ground for the sun to do the rest; and every year many a city girl gets in this way a couple of weeks of wholesome outdoor living and a little extra money. The prunes, however, may not be picked from the tree, but from the ground, as it is a fruit that, to ensure a maximum of sweetness, must be allowed to stay on the limb until Nature gives the

word to drop. Children therefore can gather prunes as capably as grown-ups, and so the work engages whole families. Much of the rural population of Central California is Italian, and upon such labor—some of it women and children brought out for the occasion from the towns and cities—the orchardists depend for their pickers. Tents are pitched in the orchards, cook stoves set up, and the family life is transferred thither for the month or so that the picking lasts; for it is a leisurely business and the trees are not shaken except to get the tag end of the yield. It is an Arcadian sort of labor under the open sky before the rains are due, and fittingly carried forward with the accompaniment of children's laughter and the songs of Italy.

"Makes a fellow feel like going into the business," I said to the Professor.

"Well," he replied, "fruit raising in California *is* a good business—if you run it right. Don't make the mistake, though, of thinking the climate does it all. Lots of lazy shallow-pates have gone into it on that basis and landed in the sheriff's office. It takes brains in California the same as anywhere else, and some capital; bugs and fungus and once in so often an untimely frost or hot spell, will keep both busy. There are deciduous fruit ranches in the Santa Clara Valley you couldn't touch at a thousand dollars

an acre; they're worth that as income property to the owners; and I can show you lemon and orange groves around Los Angeles that pay twenty-five per cent. on two thousand an acre in good years. But let me tell you, my boy, we're seeing the good end of it. It's wonderfully fine now to feast your eye on square miles of practically unbroken orchards, and feed your poetic soul on the fragrance of orange blossoms; but thirty years ago it was a different matter. This paradise that entrances us now has been bought with hard work and money at ten per cent., and the blood of millions of gophers and jack rabbits. I put *my* money on oranges, and the little trees the size of a walking stick cost us two to three dollars apiece. Well, sir, those orange roots were something new to the gopher palate but the quality in their estimation was superfine. We'd go out on the dewy summer mornings to size up the growth over night—the real estate people had posted us about the rapidity of growth in California—and we'd notice a wilting tree.

"'Needs water,' we'd think, and give it some. Next day, more wilt. 'Queer,' we'd think, and give it a shake. Over it would go, not a root to it. Gophered, and three dollars gone. I tell you it kept a man busy setting gopher traps in those days, and poisoning. Why, every rancher then carried

raisins stuffed with strychnine in his vest pocket as a matter of course along with his toothpick and matches, to drop into the gopher runs. Then the jack rabbits! We've a few left now, but they're degenerates compared with their grandfathers. It seems to me now they were as big as foxes with ears like mules, and they'd stand on their hind legs and eat the bark off trees as high as they could reach, and you know a jack rabbit has considerable reach of hind leg let alone all that's before it. Every tree had to be wrapped around with old cloths or something while we had the boys shooting off the rabbits. Then, of course, frost caught us once in a while, for we knew nothing of smudging, and some years water was scarce. It was all very different from the way it had been figured out for us on paper back East. But, bless you, we worried through—the climate *was* fine—and we helped one another like good neighbors and joyed and sorrowed together, and learned in the school of experience a whole lot that is commonplace to the rancher to-day; and that's why I say *we* are seeing the good end of it."

XIII

SOME CHARACTERISTIC GARDEN FLOWERS AND SHRUBS

THERE are certain sensations that come to you but once in a lifetime. One is the joy of your first ocean trip; another is the rapture which takes you when, having slipped away from the wintry and slushy East, you open your eyes some sunny January morning and for the first time see through your Pullman window, in a setting of majestic mountains lifting snowy summits to a turquoise sky, the palms and roses and glistening orange groves of Southern California. Around ranch-house and town-dwelling alike, garden flowers clamber and nestle. Calendulas, sweet peas and pansies, petunias, violets and marguerites, geraniums of many colors banked sometimes house-high, are commonplaces of the humblest home; callas, in places, grow literally as hedges; carnations and violets bloom by the fieldful for the cut-flower market. If the season is of average mildness, fuchsias and heliotropes hide beneath their massed bloom the cottage walls against which

they are set and even look into second-story windows; poinsettias, in vivid scarlet, glow under south eaves; and roses of every hue brighten hedge-rows and fences and even nod jauntily down from tree tops. Naturally, then, when you are at last settled in California your thoughts turn much to gardens.

For the making of a garden the Californian has practically the whole world to draw upon. Indeed, so inclusive is the hospitality of the State's climate, that the supreme temptation is to plant something of everything on earth and to turn one's place into a botanic museum. This may be poor landscape gardening, but to the new-comer it means a lot of enjoyment and some education; and there is a considerable preponderance of such medleyed horticulture up and down the State, prosecuted without plan and as personal fancy and the generosity of flower-loving neighbors with cuttings to give away have dictated. This is, I think, a weak spot in California gardening, and the artist of our family touched upon it to the Professor one day:

"Oh, I think the flowers here are perfectly beautiful, marvelous in growth and variety; but do you think the people always understand the harmony of arrangement so as to bring out the beauty as it deserves? The purple bougainvillea is simply a regal bloomer. but you find it everywhere—flowering furi-

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ously on house-roofs and pergolas and chicken-corrals; while cheek by jowl with it, as likely as not, are orange-yellow bignonias and scarlet tecomas. And then, because red geraniums and yellow California poppies can't help blooming riotously in this glorious sunshine, why let them kill each other by setting them side by side?"

"Yes, I guess we're guilty," apologized the Professor, "but what's the wild West without a bit of killing in it? We're young yet; soon enough, we'll settle down to the proprieties—meantime, we enjoy color."

To the average eye, it must be owned, this tendency to floral coloratura is a venial matter, and is forgotten in the delight of discovery afforded by the vast variety of exotic shrubs and flowers that are in common outdoor cultivation on the Coast. Of course many people faithfully keep up the traditions of the Eastern home with such old-fashioned favorites as lilacs, spiraeas, weigelias, abutilons, nasturtiums, verbenas, zinnias, marigolds, hollyhocks, and so on; and everybody of course grows the rose in its manifold varieties—that universal flower which has girdled the world as with a garland of love. All gardens have a sprinkling of these; but what gives distinctiveness to the California gardens are the tropic and semi-tropic plants which are unknown in

the East, or at least cultivated only in conservatories. Besides the yuccas and acacias, bamboos, palms and agaves, which are easily recognized by every one, there are in every community where the sentiment for flowers runs strong, scores of strikingly beautiful shrubs, vines and herbs that are absolutely novel to the tourist. It is a humiliating fact, though, that too few of the owners of these exotic plants can tell you their names. They have generally been had from nurserymen in response to orders for "pretty flowers and shrubs with beautiful foliage that will be drought resistant and not mind some frost." They have come to hand duly labeled; but the name being in Latin, always unintelligible and often unpronounceable, has not interested the purchaser, who has soon forgotten it, and Time's effacing fingers have not been slow to take care of the label. By and by such plants, which are gradually becoming established factors in California gardens, will doubtless acquire folk names, even if the botanic appellations are not popularized.

A case in point is the beautiful Mexican bush with three-fingered leaves, *Choisya ternata,* which is now sometimes known as Mexican orange-flower, the white, fragrant blossoms somewhat resembling those of the orange to which it is in fact related. Another is the curious Australian shrub, *Calliste-*

mon of several species. It bears in spring at the ends of its drooping branches cylindrical clusters of crimson flowers with bristling stamens which standing out all around the branch so exactly resemble a bottle-brush that bottle-brush the plant is called. The seed-vessels on this odd shrub resemble gray shoe-buttons and persist for years in an elongated band completely encircling the branch, each band separated from the other by a year's growth of stem. More common than either of these are three or four species of the genus *Pittosporum,* universally mispronounced by nurserymen who accent the penult while correct usage favors the antepenult. One species—*Pittosporum tobira*—is from China, and the others are Australasian. As all are evergreen with leaves more or less simulating laurel, the Australians call them hedge-laurel, Queensland laurel, Brisbane laurel, etc. They are badly in need of some common name in California, as an alternate to the cacophonous botanical one. Perhaps hedge-laurel would be worth adopting, as at least two species—*P. eugenioides* and *undulatum*—have been planted in California for hedges. Some of the species grow to the proportions of a tree, and their lively, handsome foliage, fragrant flowers and drought-resistant character put them among the

most desirable of woody plants for California gardens.

When foliage effect is desired, a shrub often planted is the New Zealand *Coprosma Baueri,* which has the advantage of a pleasant-sounding name. The flowers are inconspicuous and the features that commend it for culture are its graceful, trailing habit of growth and the rich, glossy hue of the foliage which seems as though varnished. Often its exquisite green is blotched with white or yellow, and a form entirely yellow is met with. The compelling beauty of pure foliage is never better shown than in this lovely plant as it flows over some boulder-planted slope, or rolls its billowy green in soft masses into house corners or against garden walls. Attractive for its foliage, too, but very different, is a native barberry—*Berberis aquifolium*—whose holly-like leafage in this holly-less land, is a cheerful sight. In autumn the little shrub is adorned with strings of purple berries, somewhat like chicken grapes, which have suggested the popular name Oregon grape—Oregon, because of the plant's abundance in that State, where it has been adopted as the floral emblem of the Commonwealth. A species of viburnum that is grown to some extent in eastern greenhouses may also be mentioned be-

cause it is perhaps the best known of California garden shrubs, where besides posing for ornament it is frequently put to utilitarian service as a hedge plant. Its ample cymes of small pinkish white flowers are very attractive. In modern botanical parlance it is *Viburnum Tinus,* but in everyday speech it is called laurustinus. A plant of all-round virtue, beautiful in leaf, flower and fruit, it is especially serviceable because evergreen and winter blooming, besides lending itself with the utmost complaisance to topiary work. Its native home is the Mediterranean region of Europe where it sometimes forms extensive copses in the wild, and where it has been cherished from time immemorial. Its common name is the running together of two Latin words, *laurus* and *tinus, laurus* because early botanists thought it to be a kind of laurel (which it is not), and *tinus* because it has been believed to be the plant which Pliny several times, and Ovid at least once, referred to under that name. In the tenth book of "The Metamorphoses" the poet describes Orpheus seated upon a grassy hill, touching his lyre, and as he plays he attracts to him the very rocks and trees and among these is "tinus with azure berries." So in a twinkling does the pretty plant whisk us out of this twentieth-century California with its insane craze for motor-cars and

speed and real-estate booming, and drop us back in leisurely old Greece, while the world was still young and gods and half-gods fellowshiped with men.

Among garden flowers few have more completely captured the popular fancy in Southern California than the poinsettia, which every one in the East knows as a green-house beauty. In California it grows in the open almost rivaling the poppy in the affection of the people, and one sees it everywhere in stately erectness against bungalow and villa walls. Its susceptibility to frost finds it on the anxious bench every winter, but the leaves fall more quickly than the floral parts, which in cold seasons are not infrequently seen shivering chillily at the tops of leafless stalks. Prudent gardeners set it in the least exposed places, usually against south walls, or in sheltered bays, where from December to April it flames fierily. Under favorable circumstances the plant has been known to develop heads two feet in diameter. Its name preserves the memory of a distinguished American statesman, Joel Roberts Poinsett, who served his country worthily and was Secretary of War under President Van Buren. Previously, from 1825 to 1829, he was United States minister to Mexico, where he discovered the flower. He seems to have propagated it on his grounds at Charleston, South Carolina, and about 1833 sold

plants to Robert Buist, an old time Scotch nurseryman of Philadelphia. Buist called it *Euphorbia Poinsettiana,* and introduced it into Europe. There another Scotchman Robert Graham, a botanist of Glasgow, saw it and believing it to be a new genus, rechristened it, to Buist's great vexation, *Poinsettia pulcherrima.* Later botanists have confirmed Buist's determination and reinstated it in the genus Euphorbia, but retaining Graham's specific name, call it *Euphorbia pulcherrima.* Its glorious scarlet-bracted flowers are an important element in the decoration of churches at Christmas, for which reason it has been called Christmas flower, equivalent to the name given it in Mexico, *la flor de Pascua,* or, oftener, *Nochebueno,* flower of Christmas Eve. The non-botanical may be reminded that the flaming involucre that has gained the plant its popularity, is no part of the blossom, but simply a whorl of colored leaves. The flowers occupy a small space at the point of union of these leaves. They are brilliant, too, in red and gold but more curious than beautiful and relatively inconspicuous.

Of a somewhat similar method of inflorescence are the Bougainvilleas, whose intense magenta or reddish masses of color are due not to the flowers, which none but the curious ever notice, but to the brilliant-hued bracts that envelop the flowers.

These vines, which clamber over half the summer houses and pergolas of Southern California, commemorate in their rather formidable name, one Louis Antoine de Bougainville, a French soldier and sailor of distinction in the service of Louis the Fifteenth and Well Beloved—King of France under Du Barry and Pompadour. De Bougainville was an aide-de-camp of Montcalm's at the battle of Quebec, and a gentleman of cultivated taste. Later as commander of a French frigate with a transport to bear it company, he circumnavigated the globe in leisurely fashion, taking three years to the trip (1766-69) and was the first French navigator to perform the feat. He made extensive explorations in the South Pacific, a description of which may be read in his entertaining "Voyage autour du Monde" published in Paris in 1771. The species of Bougainvillea in cultivation are natives of tropical and sub-tropical parts of eastern South America, notably Brazil, from which country the species most usually cultivated have come. De Bougainville in his voyage touched at Buenos Ayres, but his floral namesake seems not to have been introduced into Europe until about sixty years later.

One is not long among California gardens before making acquaintance with those curious floral groundlings the mesembryanthemums. They are

creeping fleshy-leaved plants, whose daisy-like blossoms with very numerous narrow petals yellow, white, and of various shades of red, open only in the sun—the reason of the sesquipedalian name, which means "flower of the midday." They are particularly liked as coverings to sunny banks and slopes which they overspread with beauty at practically no expense of care after becoming rooted, as their succulent leaves and stems make them famous drought resisters. Every one who has visited Southern California in April and May has been struck with the prodigal color of one small-flowered sort, which forms carpets of solid pink in gardens, along streets, and particularly on the hillsides and earth cliffs of many of the beach resorts. There are in the world some three hundred species of Mesembryanthemum, mostly native to the rocky sands and arid plains of South Africa, but a few are indigenous to the Mediterranean basin and to Australasia. Two or three species grow wild in California, and have been a puzzle to botanists who have never satisfactorily accounted for their presence there. One of these (*M. crystallinum*), which is found on Southern California sea beaches and strangely enough at one or two places on the Mojave Desert, is also native to Greece and the Canary Islands. It is remarkable for its glittering, often reddish foli-

age which seems frosted with particles of ice and on this account it has long been one of the world's green-house curiosities under the name of ice-plant. In the Canary Islands the burning of the ice-plant and exportation of the ashes for use in Spanish glass making was once, and perhaps still is, a considerable industry. Many species of Mesembryanthemum, indeed, are noted for grotesqueries of form, like the allied tribe of the cacti, and also like the latter bear a fruit resembling the fig that is in some cases palatable. Because of this fruit and the compositae-like character of the blossoms, members of the genus are also known as fig-marigolds. These fruit-capsules are a very interesting part of the plant. They are tightly closed in dry weather but possess to a remarkable degree the property of absorbing moisture from the air, and after a rain they open out their carpellary valves, which radiate from the center in star fashion, and permit the seeds to escape. When the weather clears they close, to gape again with the return of another shower. The curious will find entertainment in soaking mature, dry capsules in a basin of water, and watching the starry tops open out, as do the so-called resurrection plants, of the curio-shops.

A denizen of many California gardens that is sure to attract an Easterner's attention, and indeed is far

from familiar to all Californians, is a creeping turf-plant whose botanical name, *Lippia repens,* is easy enough to pronounce to be popularized. Evergreen of leaf and taking kindly to almost any sort of soil, it spreads by rooting at the joints until it forms solid mats of verdure, even choking out many sorts of weeds that flourish in grassplots. These are as pleasant to walk on and as yielding to the tread as Turkish carpet, and the little plant is as cheerful under the pressure of human feet as blue grass, or a New Mexican Penitente flat on a church door-step begging to be trodden on for his sins' sake. Furthermore it is tolerant of neglect, and will survive a whole dry season without watering or mowing, though for the best effect it should have both about once a month, during the summer. Lippia has therefore taken an assured place in California as a substitute for lawn grass in situations where the latter is difficult to keep up, as in garden paths and on dryish slopes. Under trees and in unsunned corners, it has a tendency to grow erect, and I know a garden where a somewhat shady bench has been completely blanketed, legs and seat, by the aspiring little creeper which was originally set out as a turf.

Not the least interesting feature of lippia is its bloom. With the coming of warm spring days, after an enthusiastic spell of inching into such new

nooks and crannies as it can find—it has to be watched against encroaching on flower beds—the plant becomes set with little purplish knobs of buds, which in April expand into flowers, each about as big as a large pin. These, to the number of about a hundred in a dense flattish head half the diameter of a dime, are borne at the height of an inch or so above the ground, and are of a lilac color with a tiny yellow eye. The lower ring of blossoms opens first, and to watch day by day the rising tide of bloom, circle upon circle until the crown is solid color, is like being a looker-on at some building operation in Lilliput. For weeks a lippia patch in spring is a sheet of delicate color, where bees hum in ecstasy all the sunny days, to the great disquiet of human trespassers in low shoes, who fear for their unarmed ankles. California owes this charming plant to Dr. F. Franceschi, of Santa Barbara, whose enterprise and enthusiasm, extended over a quarter of a century in his adopted State, have wonderfully enriched her exotic flora.

His account of its introduction into California, which occurred about 1900, is interesting:

"It was in 1869, barely one year before the fall of the second Empire, when the centennial of the first Napoleon was celebrated with great festivities at his birthplace, Ajaccio, in Corsica. The Superintend-

ent of Parks of the city of Florence, Signor Pucci, to whom the floral decorations had been entrusted, was quite struck with lippia as it had been used in the public garden of Ajaccio. He took some with him to Florence, and put it on trial in one of the public gardens. There it did so well that it soon spread in other parts of Italy, and particularly along the Riviera, where the climatic conditions are very much like Southern California. In the year 1898 my daughter, who had recently come from Italy, called my attention to the fact that for several years lippia had been used to carpet the esplanade at the Naval Academy at Leghorn, where 500 boys had their daily drilling and all sorts of games. It was obvious that if lippia had done so well in Italy, it ought to do the same in California. From the Director of the Botanic Garden in Rome I secured by mail a small tin box of lippia plants, less than twelve ounces weight. Now after ten years, there are thousands of acres planted with lippia between California, Arizona, Mexico and Australia, and it all came out of that small tin box."

Apropos of creeping plants, there is now thoroughly established in California gardens the creeping fig (*Ficus repens*), which has long been cultivated in Southern Europe as well as in Eastern conservatories, and is a native of Japan and China.

Unlike lippia, which is essentially a ground dweller, *Ficus repens* is a born climber, and once started its ambition knows no limits. Stone walls and board fences, gate posts and window boxes, houses of whatever material to the topmost chimney pot, tree trunks into the very crown, become in time plastered with the industrious little vine, whose leathery leaves—a rich sober green in age—are in youth rosy hued and golden-tinged, as youth's outlook should be. Altogether it is, I think, as charming a plant as Dickens thought the ivy green, and strange as it may seem, it is really a fig, near akin to that great tree which casts protecting arms over so many California homes. I never realized this relationship, however, until one day my eye caught sight of a branch bearing fruit, which is not often noticed. It was in shape and general make-up quite like a fig, but the seedy interior lacked the sweet juiciness of the edible species.

The unbridled rhetoric of much of California's advertising literature would make the reader think that the gardens of the State are a perpetual riot of bloom. Having wintered and summered one for several years and watched my neighbors' for rather longer, I am inclined to think the Horatian maxim about people changing their sky but not their spirit, holds pretty well for plant life too. Plants need

their bit of rest, even as you and I, and if you use all of California's twelve-months-in-the-year of growing weather to keep them going all the time, they will sooner or later play out. Of course by proper selection one will have something blooming at all seasons, but there is a low tide and a high tide just as elsewhere in the world. Summer, indeed, with its entire absence of rainfall is the natural resting time for most plants on the Coast, and to make a showing of flowers then is the gardener's most exacting task. As a matter of fact, the wise ones let things follow their bent and judiciously encourage dormancy in summer; for instance, by withholding all but a minimum of water from roses. With the coming of September, pruning, thorough watering and general stimulation are resorted to for the production of those winter flowers which are expected by every winter visitor.

An overwhelming degree of bloom, however, is not to be counted on in the season of short days and occasional frosty mornings, which make for retarded growth. Nevertheless, in gardens everywhere, there is always a good winter showing of such herbaceous plants as violets, stock, calendulas, sweet peas, carnations, English daisies, pansies, verbenas, marguerites, mignonette, sweet alyssum, and geraniums, and, in the more sheltered situations

heliotrope and nasturtiums, among tenderer sorts. Of shrubs and vines, I noted blooming in mid-January of the present year (an average season) in the general vicinity of Los Angeles, about twenty different sorts. No doubt there were many more that I did not happen to see, while sea-coast places like San Diego and Santa Barbara, where more equable conditions prevail, would perhaps show even more. Among garden shrubs that caught my eye were—not to speak of roses—the showy *Choisya ternata* and abutilon, *Aloe arboreus* with scarlet racemes erect like glowing pokers, and the camellia's exquisite waxen roses in red and white; the New Zealand veronica with blue, bristly spikes, the fragrant daphne of Japan (a large bush in many gardens); the Formosan rice-paper plant (*Fatsia papyrifera*), with its tropical foliage and creamy white flower panicles; and *Cestrum elegans* with its slender funnels of bloom in drooping magenta clusters. The orange trumpets of *Bignonia venusta* fringed some bungalow-eaves and pergola beams, and scarlet tecomas and Bougainvilleas of various hues twined themselves over others. *Arbutus unedo,* the European strawberry tree, was in certain gardens a little show to itself, the same individual bearing flowers, green fruit, and red mature "strawberries." The berries, by the way, though very ornamental, are a

disappointment as an article of diet, for they are rather dry and chaffy, though edible, and the early birds usually consume them before a man gets out in his garden of a morning. The white flowers, in shape like tiny urns, are very pretty in the eyes of every one who appreciates the day of floral small things.

After all is said, however, it is the spring that brings to California as elsewhere the culmination of garden bloom. This may be as early as March, but usually the crest of this wonderful floral wave breaks on the Coast in April. Then come the perfect days of the year. The heavy rains are over; the lengthening days are filled with sunshine, sometimes after a night of showers or of drenching fog that makes the face of the garden glisten like the wet face of love. Then the air is sweet with fragrance of orange blossoms and freesias and bursting honeysuckle, musical with songs of meadow-larks and mockers and the ubiquitous but unfriended linnets. Miles of Cherokee roses, white and pink in hedge-rows, line country roads and divide town lots like snow banks; wistarias equally prodigal of blossom—here white, there lavender—mass themselves over arbors, festoon themselves along fences and clamber far up into tree tops to be caught there in mid-air in arrested cascades. Jas-

mine pours its liquid gold over roofs and gateways. Banksia roses, white and buff, and coppery Gold of Ophir, snowy Lamarcks and Rêve d' Or in apricot yellow, rise everywhere in fountains of color that not infrequently bury whole houses beneath the incredible lavishness of their bloom. In cholos' cottage-gardens and on millionaires' estates, in the strips of parkings that line the residential streets of cities between curb and sidewalk, on wayside country banks and by ranchers' gates, bedding plants of every known sort—often self seeded—blaze in colorful masses—gazanias and verbenas in lakes of vivid orange, red, pink and white; mesembryanthemums dripping crimson and yellow from bank and wall; airy Spanish iris and the blue and white flags of the old home; petunias, nasturtiums dwarf and giant, pansies by the million; Shasta daisies as big as saucers, gaillardias, dazzling patches of eschscholtzias, geraniums climbing up palm trunks and house walls; poppies of every sort, snowy borders of sweet alyssum, and roses, roses, roses.

Yes, if you want to see the gardens of California at their flowery best, to say nothing of the wonderful wild gardens that Nature alone tends, the spring is the season of all that you should not miss.

"A California spring may not be absolutely per-

fect," remarked the Professor with an acquiesce-if-you-dare sort of look in his eye, "but this side of heaven, my boy, it's the best there is, and romance as you will, you can't come up to the truth about it."

THE END

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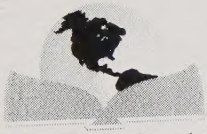

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